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THE IRON AGE

A Review of the Hardware, Iron and Metal Trades.

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Reading Matter Contents.....page 50
Classified List of Advertisers.... " 113
Alphabetical Index to Advertisers " 118
Advertising and Subscription Rates " 57

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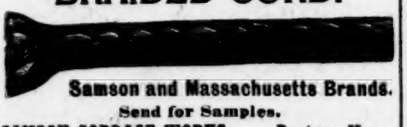

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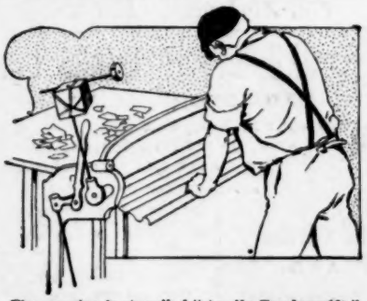

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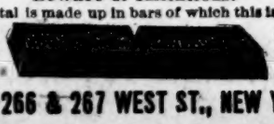

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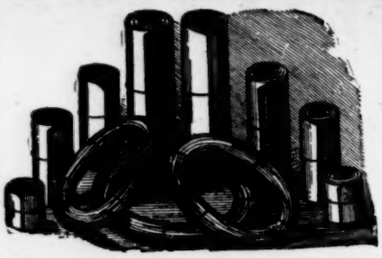

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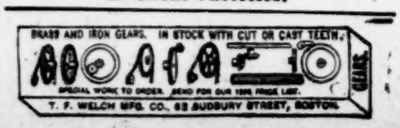
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THE IRON AGE.

THURSDAY, FEBRUARY 23, 1899.

Copper Plating Vessels

The value of a sheathing of copper for the hulls of vessels has been appreciated for a long time. The attack of both wooden and iron hulls by marine growths has reduced the speed and made necessary the more frequent docking and cleaning of vessels, all of which decrease the earning power while increasing the cost of operation. It is the usual practice to plate wooden vessels with copper sheets and to protect iron ships with so called antifouling paints. The foreign method of covering a metal hull with a casing of wood and then sheathing this over with copper is the only process which has ever been adopted in the past to meet the problem.

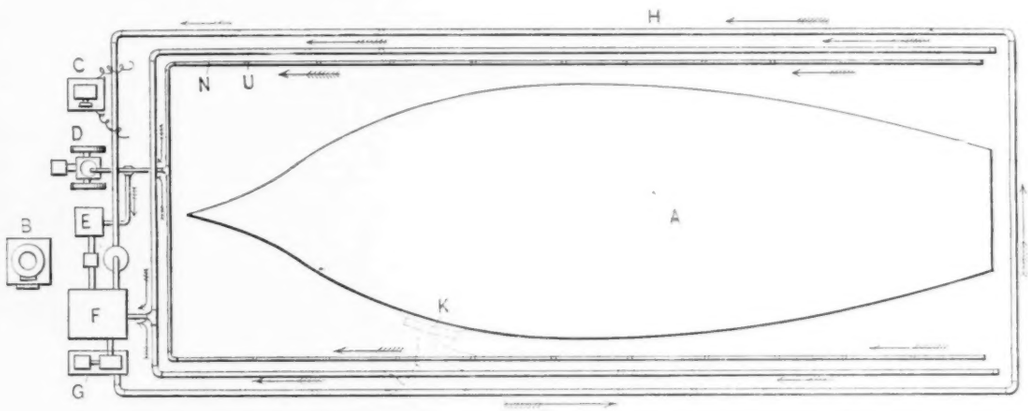


Fig. 1.—Plan.

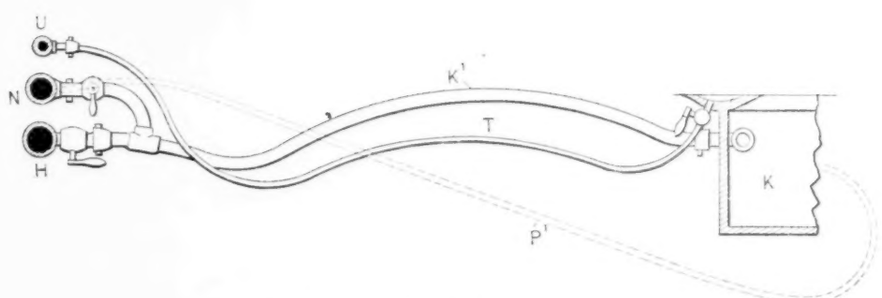


Fig. 2.—Section of Bath and Connections.

COPPER PLATING VESSELS.

This has been tried on some of the war ships of the British navy and may be tried upon some of the new vessels of our own navy. One main objection to this plan arises from the fact that water finds its way to the space filled with wood between the copper and iron, the result being the generation of electrical action and the consequent attack of the hull.

An important factor in the consideration of copper as a coating for vessels is the fact that the frictional contact of water against copper is over 5½ per cent. less than against iron. A painted surface can never be made as smooth as a burnished copper surface. An iron vessel with a speed of 20 knots per hour, if coated with copper will have a capacity of 21 knots.

The action of water on iron or steel readily oxidizes the surface, making it rough and greatly adding to the frictional impact in water. On the other hand, the exposure of a copper surface in salt water causes the formation of acetate of copper, or verdigris. This is a preservative. It is oleaginous in its character, and forms a coating which is probably the best base known as a substance for this purpose. It is remarkable, however, that it will adhere to copper with greater tenacity than to any other known material, and it matters not how often this acetate is removed from the surface of the copper, it will, in a very short time, form a new coating, thus presenting a condition which makes copper the best known material for the skin of vessels. This film forms in a most perfect state upon a surface of pure copper.

Some time since the National Ship Copper Plating Company of 253 Broadway, New York, began plating vessels by means of electricity, under patents controlled by them. This method does away with sheathing, thereby reducing the weight, and provides a pure copper protection of any desirable thickness, and from which follow all the advantages to be derived from the use of copper upon the wetted surface. About four years ago the ocean tug "Assistance" was electroplated with copper, and since that time has been in continuous service in salt water. The hull is built of iron plates riveted together in the usual fashion. A thorough examination was made of this boat last November. There was no evidence of electrolysis on the copper line, and there was no sign of verdigris or other evidence of galvanic action where the copper left off and the iron began. The surface of the copper was in excellent condition, although the boat had not been cleaned since plating. It was found that the copper, particularly upon each side of the bow, where it had been worn, was somewhat reduced in thickness, but in no place had the copper been stripped from the iron. This proves conclusively the intimate union which exists between the two metals when united

by means of electricity. In short, the hull had been effectively and thoroughly protected.

Method of Depositing the Copper.

The method of copper plating followed in this instance was somewhat crude, the result being that the copper varied in thickness over different parts of the boat. The new method, being in the nature of local depositions, will do away with this and will make a coating uniform throughout. The new system provides means for holding the electroplating baths in contact with the vessel by atmospheric pressure. Provision is also made for automatically supplying the plating solution in a constant volume to the tanks or baths, and for keeping a constant circulation through the baths. Other important considerations, which will appear in the description, are also provided for.

As the hull of a vessel has a surface with a varying contour, it is necessary to make a bath which is flexible, or one which has its body rigid and its contact edges flexible.

As it is an important matter to keep the metallic saturation of the solution constant in the bath, and equable in all of the baths at the same time, and, further, that the entire surface of the vessel's hull, which is in process of treatment within the area of the bath, should have a uniform exposure or contact of this solution, it is necessary to cause an upward movement of the solution through the bath, such movement being opposite to the gravitating tendency of the saturated solution, and instead of having the solution enter at one point below and escape through a single pipe above, means are provided as shown in Figs. 2 and 4. In Fig. 4, near the base, within the bath, a horizontal pipe is connected centrally with the inlet nipple J'. This pipe is closed at both ends and has on its upper side a line of small orifices, through which the solution enters the bath and passes up to the nipple P and down through a flexible tube to the drain pipe N.

It will be seen that the pump G forces the solution from the reservoir, through the line pipe H to the flexible tube K', thence into the bath, and overflows from the

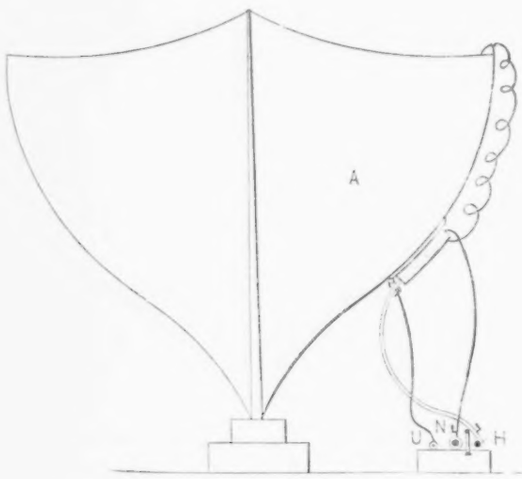


Fig. 3.—End View of Vessel with Bath in Position.

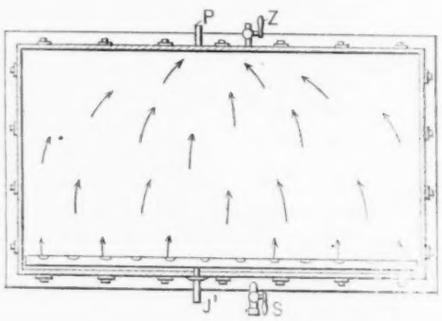


Fig. 4.—Side View of Bath.

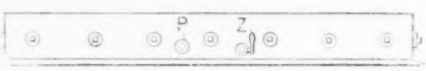


Fig. 5.—End View of Bath.

COPPER PLATING VESSELS.

Fig. 1 shows the plan outline of a vessel, A, at one end of which is located a boiler and engine, B, and near by a dynamo, C, an exhaust or vacuum pump, D, a drain tank, E, a solution reservoir, F, and a pump, G. The dynamo and pumps are connected with the engine to perform the required work, and the pump G, which is located by the side of the reservoir, is connected with it by a feed pipe. The other side of the pump has a drain pipe, H, Figs. 2 and 3, which extends around the vessel, and is brought to the reservoir, where it terminates in the base of a stand pipe. The upper end of this stand pipe has an overflow pipe, through which it discharges back into the reservoir.

The pipe H is located on the floor of the dock and has at intervals short nipples provided with cocks and means for connecting a union, J', Fig. 4. This pipe, H, is designed to supply the electrolytic solution to the bath through the flexible tube K', the latter having a union at its upper end which connects it to the bath through the medium of a nipple, secured in the side wall of the bath. Near the lower end of this flexible tube K' is a short branch connection provided with a cock, and a union for attaching it to the nipples along the line of the pipe N. This pipe, N, branches out from the solution reservoir F, so that when the bath K is filled with the solution and it is desired to withdraw the same, cock J' is closed and cock M' is opened, and the liquid in the bath will then pass down through the branch tube and back to the reservoir through the pipe N.

pipe N back into the reservoir, thereby keeping a constant movement of the solution through the bath. As the capacity of the pump should be greater than is required by all the combined baths in the series, the residue travels around the supply pipe H and is forced up into the stand pipe, which by its hight determines the pressure of the solution in the various baths.

Each bath has anode holders placed at intervals along its side walls, and as they are equidistant from the side of the vessel when the bath is in position, however much the bath may be curved (to conform to the curvature of the vessel), the electro-deposition will be uniform on the cathode. Otherwise the electrolytic action would be greater over the zone where the anode approached close to the cathode surface.

The bath has a concaved flexible web. A flexible tube leads to the air pipe U, which is provided with nipples at suitable intervals. This pipe is connected with the vacuum pump D. This pump is constantly in action, so that as air is exhausted from the bath atmospheric pressure holds it in position.

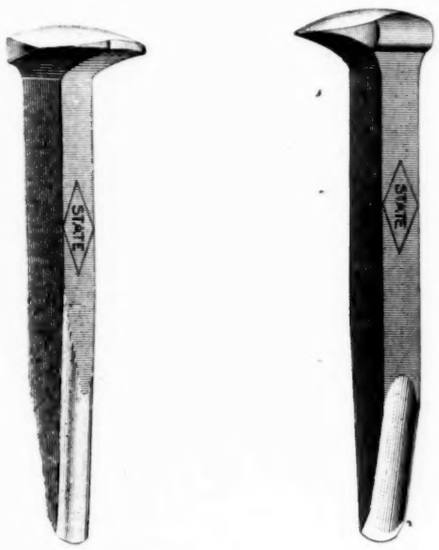
It is evident that with this method the plates of a vessel may be copper coated after bending and before insertion in the ship. Rivet heads and exposed edges may be copper plated after completion of the ship. In fact, the plan provides for electro-plating any part of the vessel at any time and to any required thickness. An assurance is thus provided that there will be absolutely no exposed iron below the water mark.

Calcium Carbide and Acetylene in Factories.

E. V. French, inspector of the Associated Factory Mutual Fire Insurance Company, has submitted the following preliminary report:

A number of mills having already expressed a desire to try acetylene lighting, an immediate statement of what could be advised was desired. This report, which gives briefly the present status of the question, was consequently made. With the present state of the art and the existing prices of carbide, it is believed that any mill putting in an extensive acetylene plant is, to a considerable extent, entering unexplored territory. While a great deal of experimenting has been done in this line, there is yet much to learn before a surely satisfactory lighting system is secured. Most any system at present available requires considerable care and attention in handling the generator. The flame tends, from the great richness of the gas, to become smoky if the burners are not in perfect order. Computations on the present prices of carbide, and with steam and water power at the cost existing in many Mutual mills, indicate that it is very doubtful if acetylene is at all a cheap illuminant.

Waiving, for the instant, the question of expediency and considering the dangers in acetylene, the following general properties of the gas may be considered. The figures given are based upon best evidence so far attainable and are believed reliable. There are many conflicting statements abroad. Mixtures of acetylene and air, where the acetylene is from 6 to 25 per cent. of the mixture, are explosive, and there is some good evidence that the range may be as great as from 5 to 50 per cent. Comparing this with illuminating gas, mixtures of illuminating gas and air are explosive over a range of from 7 to 18 per cent. of gas, showing that the range of explosive mixtures of acetylene is much wider than for ordinary gas. Explosions of mixtures of acetylene and air are more violent than mixtures of ordinary gas and air. The weight of acetylene gas, taking air as 1, is about 0.90, showing that acetylene gas tends to rise, so that in this respect it is better than naphtha gases, which are heavier than air.



THE DIAMOND SPIKE.

Acetylene gas under some conditions may form acetylides—*i. e.*, compounds with metals, which are in themselves pure explosives. The best evidence available would seem to indicate that the principal danger is where pure copper is exposed to acetylene; even then, however, the presence of moisture and possibly some impurities in the gas is probably necessary for the formation of acetylides. Other metals commonly used apparently are not subject to this danger, and there is considerable evidence to support the feeling that the ordinary small composition fittings used in a gas plant are not dangerous, though any considerable amounts of copper or copper alloys in piping or machinery or in the shape of large fittings had best be avoided.

If, after considering the above conditions, there is still a desire, in any case, to permit an acetylene plant, the following general requirements, it is believed, should be carefully followed:

1. The generator should be outside the main buildings and thoroughly cut off from them, preferably in a small building by itself, 50 feet, if possible, from important buildings. As a whole, it should be treated about like the ordinary naphtha gas machines. The dangers from possible escape of gas in handling the machine, or in repairing it, or by possible ignorance of an attendant, or by accident, and the very considerable dangers introduced if carbide itself is brought into the building, make it appear entirely improper to place one of these machines in a first-class risk.

2. The carbide should be stored entirely outside important buildings, but might be in a compartment of the generator house. It should be looked at about like the main naphtha storage tank of a naphtha gas plant.

3. Before a plant is put in the complete plans should be submitted to the underwriters for approval, as there is no standard of construction of machine which can be approved in a general way. There are a number of important features in any machine supplying acetylene gas needing attention, such as certain limit of pressure, constancy of action, so that there is no chance of the production of gas being stopped and then started again after the burners have gone out, allowing the gas to escape through the open burners. Action such that excessive heating, which tends to bring impurities into the gas, which might make trouble in the building, and other similar points, need careful consideration.

The interesting possibilities of the gas have attracted almost an innumerable number of inventors, some careful, but many without experience and a reasonable understanding of the possible dangers involved in handling any gas. Only recently the writer received a list of 70 machines which had been brought to the attention of the underwriters, every one of which machines was considered in such shape that approval was impossible, so that the use of the machines was absolutely inadvisable. It is therefore evident that each special case, for a time, will have to be considered on its own merits. It would certainly be unwise to assume that further experience might not remove many of the objections here raised, but it is believed that a conservative course is at present entirely justifiable. It is therefore believed that the best advice for any one desiring to-day to put an extensive acetylene plant into a Mutual risk is, to wait. Let further experiments be made, and if some light must be had at once, put in an electric plant.

The Diamond Spike.

The two cuts here presented show clearly the principle upon which the spikes of the Diamond State Iron Company of Wilmington, Del., are designed. It will be noted that the point is so shaped as to cut through the fibers without breaking or disrupting them, thereby facilitating driving while offering, it is claimed, greater resistance to pulling than any other form of spike. The points somewhat resemble the cutting edge of a carpenter's gouge, and there is no tendency to turn in the wood even when driven in the toughest timber. The draft of the point is so devised that in driving the spikes home they are drawn over in perfect engagement and full bearing on the flange edges of the rail. Since the ends of the fibers are turned down and confined by the fluted or gouge like form of the point, they exert great downward pressure upon the spike and increase its holding power. It is stated that in tests of these spikes, 4¾ inches long, in good cedar they offered 20 per cent. more resistance to being pulled than press pointed spikes.

Cotton Tie Rolling Record —The record for rolling cotton tie was recently broken on the Morgan continuous mill at the Joliet works of the Illinois Steel Company. In a single turn of 10½ hours more than 400 315-pound strips were rolled. Each strip is about ½ mile long and the gauge from end to end is of absolute uniformity.

The Keystone Bridge Works department of the Carnegie Steel Company, Limited, of Pittsburgh will supply the steel superstructure for three river bridges for the San Francisco & San Joaquin Valley Railway, to be placed on that part of the road which is being built west of Stockton, Cal. The Carnegie Steel Company, Limited, are supplying the rails for the new section of this road. One of these bridges will cross the San Joaquin River proper and will have a draw span of 233 feet. Another will be over the middle river and will have a draw span of 202 feet and one approaching span of 60 feet. The third will cross the old river with a draw span 202 feet in length and one approach 45 feet long. The Keystone Bridge Works have commenced the delivery of the steel superstructure of the long bridge of the Buffalo, Rochester & Pittsburgh extension across the Allegheny River at Mosgrove.

Malleable Cast Iron.—II.

BY ERASTUS C. WHEELER.

The Influence of Carbon.

Carbon has always been considered the most important metalloid contained in pig iron. It has been counted a great factor in the melting point of metals, and yet of all the impurities is the one most dependent upon some one other metalloid for its presence, either as graphitoidal or combined carbon. Silicon has an all powerful influence upon its formation, and the two should be rightly considered together. Carbon is contained in pig iron through the blast furnace from the organic matter contained in the ores and melting agencies. When the pig iron is originally cast at the furnace there will occur an unusual phenomenon in the metal. If the casting temperature should be high (and this will, of course, guide the percentage of silicon present) the carbon will not affiliate with the iron, but rather on the contrary will separate itself to such an extent as to form the crystallization form of graphitic carbon, and after iron is cooled and broken is the predominating feature of product. The metal has not a homogenous appearance, being a collection of crystals, large and small. This most extraordinary occurrence must by the laws of nature be acompanied by high casting temperature. The higher the casting heat the larger will be the crystals; in the furnace grading this will be a standard for the founder to follow. As the initial heat is decreased the smaller will the crystals become and iron will range from No. 1 to No. 4. In a No. 5 or No. 6, to all outward appearances carbon has been eliminated; the product has no longer the black crystals of the No. 1. Where is the carbon? If it were true that carbon could stand alone (so to speak), and assert its individuality after the manner of sulphur, or phosphorus, irrespective of any other controlling influence, it would still be in evidence. The higher the percentage of silicon the higher will be the amount of graphitic carbon present; the lower the silicon the less will be the graphitic carbon. It is still a matter of great doubt in the minds of metallurgists as to whether the carbon which does not separate in the cooling as graphitic carbon is truly combined with the iron or not. Chemistry during the past ten years has thrown great light upon this subject and from analyses furnished from the same brands of iron, though of different gradings, we find that the amount of "total" carbon varies but little in a No. 1 or a No. 4, while the silicon changes radically.

It is heat which determines the presence and amount of graphitic carbon, this being found highest in a No. 1, which, if heated and quenched suddenly, would change its carbon to a state of combination with the iron. The longer the metal will remain liquid in its original casting state (the higher necessarily will be its heat or silicon) the more prominent will be graphitic carbon. If the casting temperature be low the carbon enters readily into combination with the iron, and fracture presents a distinctly homogeneous appearance. In the theory and practice of malleable iron casting the manufacturer is striving to obtain combined carbon to a high degree in his castings, and will turn naturally enough to that grade of iron which most resembles his desired results. If a whole heat were charged of a No. 1 iron, high in silicon and graphitic carbon, there would be the greatest difficulty experienced in getting carbon into combination. The reason is very clear. Carbon combines at a very low latent heat temperature, and in the No. 1 the latent heat unit is high, the silicon must be burnt out to a great degree, and carbon will not combine in this instance until the silicon or the heat units have become materially reduced in power.

This is primarily the cause for iron remaining gray in the test long after the melter has found it hot enough to pour. It is not that the percentage of silicon is too high, but the excess silicon is producing enough heat in both to retain carbon in its only assertive form—namely, graphitic. As the silicon burns out the tests will become more mottled, until finally a perfectly clear test results. Therefore the careful manufacturer chooses his irons from those grades presenting the nearest approach to his desired ends, and will choose irons which, when melted and brought up to the pouring point, will contain enough silicon to impart latent heat to the bath, and at the same time not interfere with the combination of carbon. The peculiar local conditions must be studied and understood to determine the amount of silicon necessary for the mixture, and when that amount has been definitely proven it will be found an almost invariable rule that when it is exceeded the test will remain gray. Carbon is not eliminated in such large percentages in air furnaces during melting as has been supposed; rather the greater loss occurs during annealing. The best material in the whole charge is the sprue, and no difficulty is encountered in carrying as high as 70 per cent. on mixtures with the highest results. The whole success of malleable iron depends upon the elimination of carbon. The lower the percentage of carbon in any of the metals incident to the use of pig metal the softer and more readily pliable will be the material. The theory of annealing is that the deposition of carbon commences from the outside and penetrates castings through the generation of carbonic oxide. The nature of the iron will, of course, determine the amount of time they should be annealed. If the carbon and silicon are in proper proportions the carbon will go freely, and anneal may be shortened. But if the carbon is held back here by a too high percentage of silicon the resulting material will show invariably a steely fracture, and a great many persons would be led to imagine that the iron was not properly annealed, and is still hard iron. The silicon must be reduced in the original mixture before the carbon will "let go" in the anneal. This fact will develop in almost every malleable foundry, and most frequently happens in the following manner: Castings packed in the same pot, off the same patterns, will show the widest variance. Some will show that velvety break, the sign of good malleable, while others directly alongside will be hard and show a high crystalline fracture. This is rather a puzzling question to the average amateur, and is generally passed over quickly, through inability to solve it. Chemical analysis will demonstrate the theory without fail. The black, velvety fracture will contain a much smaller percentage of silicon than the one showing crystalline break. The difference in many cases under personal observation has been as high as 0.40 to 0.50. They had been cast from different heats. Second annealing will in a degree overcome the difficulty, but the material is never quite the same, as its life has been attacked too much. The necessity for keeping the mixtures constant cannot be too strongly impressed. When the best general analysis for any local practice has been determined, there should not be any liberty taken with it. In working the metal in furnaces use plenty of "rabblers," mix the iron in the bath thoroughly, turn it over completely, allowing the flame to ignite and burn off the silicon. In reference to pokers, bars, etc., use freely; wrought iron is cheaper than charcoal iron, and you are imparting a very desirable low carbon product to the metal. It may be urged that with the knowledge ever before the malleable founder of the desirability of combined carbon, he ought to charge into his furnace pig metal having the carbon in that form. This would not be good practice, because the iron would contain no "life" whatever, its silicon and carbon having already been reduced. It is found necessary to use a large proportion of pig iron high in graphitic carbon, in order that the mixture may contain enough heat to take up for the period of melting and bringing same up to pouring point. With the high percentage of silicon in a No. 1, we find the liberation of carbon almost in its entirety, its freedom of action uncontrolled. In the No. 6 the carbon is confined, its power void. It would prove interesting at this point to examine the analyses of some 13 different gradings of pig iron, and note that with the decrease of silicon from No. 1 to No. 6 the graphitic carbon also decreases and combined carbon increases until the latter form assumes the supremacy in No. 6:

Grade.	Silicon.	Comb. carbon.	Graphitic carbon.	Tota carbon.
1 Scotch	2.30	0.52	2.93	3.45
1 Soft	2.05	0.49	3.00	3.49
1 Special	1.85	0.42	2.98	3.40
1 Regular	1.60	0.38	2.94	3.32
2 Low	1.25	0.58	2.85	3.43
2 High	1.00	0.62	3.04	3.64
3 Low	0.84	0.72	2.85	3.57
3 Medium	0.70	0.68	2.90	3.58
3 High	0.61	0.71	2.78	3.49
4 Low	0.47	0.80	2.30	3.10
4 High	0.32	0.91	2.55	3.46
5	0.22	1.62	2.00	3.62
6	0.10	3.67	....	3.67

From the above table one point will at once attract attention. The greatest variance in total carbon has been only 0.57 per cent. There is no low carbon pig metal produced as yet, although a freak cast occurred from ores from Mr. Edison's plant, about one year ago, when the pig metal was really malleable. This was caused in a measure by the titanium in the ores used. In mixtures for light castings a great many heats are poured while the test still shows "gray," but on account of the thinness of patterns the carbon combines on meeting the damp surface of the mold. Too much care cannot be taken when making the tests for heavy work mixtures A rapid cooling will combine carbon quickly, and the risk is run of having resulting castings "gray." Iron will expand when first poured, to a degree varying with the amount of latent heat in the metal. In heavy work, when the heat is any way "soft," the shrinkage and segregation will be more pronounced than when the mixture is "high." It will prove interesting to here note the results of a few chemical and physical tests made with the view of throwing some

light upon the question, what should be the proper percentage of total carbon to eliminate from castings from hard iron, through the anneal, in order to obtain the best product. It is understood that the total carbon is given in all cases.

	Carbon. Mix.	Carbon. Hard iron.	Carbon after anneal	Tensile strain.	Elongation. in 6 in.	Per cent. elongation.	Silicon. Hard iron.	Silicon. Soft iron.
"A".....	3.02	2.80	2.10	39,150	0.32	5.33	1.05	0.72
"B".....	3.36	3.12	1.92	38,040	0.37	6.16	0.92	0.63
"C".....	3.36	2.92	1.80	36,280	0.42	7.00	0.92	0.56
"D".....	3.20	2.82	2.00	33,700	0.49	8.16	0.75	0.48

These tests were all taken from heats pouring light work, where great malleability was required rather than maximum strength. Test "A" shows a reduction of 0.92 in carbon and 0.33 in silicon, a rather high elongation and also good tensile characteristics. "B" and "C" are from the same mixtures poured from the same furnace, but showing furnace irregularities on two heats. "D" is very close to an ideal malleable iron for light work, showing a loss of 1.20 in carbon and 0.27 in silicon. In mixtures prepared for ordinary railroad castings the following figures are presented for consideration:

	Carbon. Mix.	Carbon. Hard iron.	Carbon. Annealed iron.	Tensile strength.	Elongation in 6 inches.	Per cent. elongation.	Silicon. Hard iron.	Silicon. Soft iron.
22.....	2.80	2.60	1.82	48,900	0.36	6.00	0.82	0.42
27.....	2.68	2.49	1.63	52,700	0.47	7.83	0.82	0.44
39.....	2.72	2.55	1.62	54,100	0.52	8.66	0.78	0.48
84.....	2.80	2.72	1.52	50,380	0.61	10.16	0.75	0.50

The one patent conclusion to be drawn from above figures is the correctness of that statement made before, that the less the percentage of carbon the more malleable the product will become, how silicon is a sure guide for the removal of carbon in a perfect anneal. There is one very important feature in the annealing of castings which is rather lost sight of in a great many foundries which have a set rule for the number of days for annealing. If the iron is always constant in the mixture this is all right, but with the variations in the metal come the troubles of the annealer. A mixture once established, and that only after exhaustive analysis and demonstration, should be strictly adhered to, to reap the best results of practice. When castings are overannealed they will be brittle, owing to a formation of oxide of iron with continued heat, after the carbon has been partially removed. The action of ferric oxide and carbon at a red heat indicates somewhat the nature of the processes at work during decarbonization. The ferric oxide and heated air in contact with castings first oxidizes the carbon on the outside, and then passes inward, reacting upon the carbon.

The Influence of Phosphorus.

This metalloid, in conjunction with silicon and carbon, has an influence upon the fluidity of iron, and how great its powers depends entirely upon the percentages of these other alloys present. Unlike sulphur, its presence is not strictly due to any heat condition in the blast furnace. It is a result purely of the composition of the blast furnace burden. In the Lake Superior ore the phosphorus is very low indeed, but the Eastern furnaces use it but sparingly because freight rates are high. The percentage of iron is very large, and it enriches many an otherwise "lean" burden. In the East, as in the Central West or Valley regions, the makers of iron for malleable or Bessemer limits find themselves very close on phosphorus to pass specifications. The amount of phosphorus in pig iron does not change very materially with the grading. In the No. 1 it will be found exerting its full powers toward producing a more liquid metal, and in the No. 6 it will be dormant simply for want of opportunity to expand and free itself. Owing its origin to no heat conditions, yet upon remelting its prominence is directly attributable to heat generated in furnace. Ther exists probably more uniformity of ideas in relation to phosphorus, and amounts of same necessary for good malleable, than of any of the other alloys. In fact, there seem few questions asked if the amount does not exceed 0.20. With an excess of phosphorus, say 0.25, we find a condition arising in finished material somewhat resembling the effects of sulphur—namely, hardness. It would be an infinitely fine point to draw the distinction between the effects of the two metalloids after the castings have been annealed. It does not leave any directly attributable shrinkage cracks, but rather asserts itself when the iron is "hard." There is a great deal to be written concerning the shrinkage of metals, and that phenomenon is not entirely caused by the natural forces at work, but is aggravated in no small degree by the immediate chemical actions caused by the impurities. In the founding of irregular patterns we find the metal cracking upon cooling, and the subsequent loss of casting. This has in a measure been traced to the external and internal strains at work, but the more nearly "chemically pure," so to speak, we make our initial iron the less this will occur. Phosphorus is not a dominating feature in pig iron; it cannot be said that like silicon and carbon it will stand alone. It depends entirely upon silicon for its assertive qualities. In charcoal irons it is prominent, coming directly from the purely organic nature of the fuels, but in coke irons we have a reversal of conditions. There is a very general feeling abroad that the phosphorus in malleable, as in steel, has a very weakening effect, yet there is not sufficient data published to prove all these assertions. If, like silicon or manganese, we could locate with some degree of satisfaction where the line should be drawn, the benefit would be great. In casting gray iron, or ordinary stove iron, a very high percentage of phosphorus is carried with a correspondingly high silicon, and the two metalloids in conjunction make a very fluid metal, necessary for the large and rangy patterns. In malleable work it is not practicable to carry a very high silicon and the phosphorus does not quite perform the same functions. Nevertheless its working in the air furnace may be traced with accuracy. If a heat is charged in which the percentage of silicon is high, and phosphorus low, we have the condition to face in molten iron of not having the "carrying properties" of a higher phosphorus metal. The action of phosphorus in the anneal has never been satisfactorily explained, there being a great many contrary ideas prevalent regarding the change in chemical formations of this alloy, from the hard iron to the liberation of the final anneal. It is good reasoning to believe that phosphorus, like carbon, changes its formation during period of anneal from determinate phosphorus in the hard iron to an almost amorphous condition in soft iron. From the fact that titanium is present with carbon and phosphorus come the widely differing results of chemists on these metalloids.

The Influence of Manganese.

This metalloid is perhaps the most peculiar one found in pig iron. The presence of manganese is supposed to exert a controlling effect upon shrinkage, yet there are many who still cling to the idea that shrinkage is directly consequent to no set rule concerning amount of alloys present, but rather from the casting strain. In the East the foundries are fighting manganese and in the West, where are located the larger works, manganese is entertained as a welcome guest, and yet both sections are producing excellent material. There will always be these extreme views to face concerning the questions of amounts of metalloids, and the more conservative view the founder takes the more peace of mind he will enjoy. If general practice could be quoted with a degree of safety manganese could be said to materially affect the shrinkage of metals to a lessening degree; and for the non-usage of chills, where one foundry a few years ago was using chills upon almost all large shapes, by raising the percentage of manganese in mixture this "chilling" was to a great extent avoided, and the reasons advanced were that the manganese had oxidized the carbon to the extent of rapid cooling. The rapidity with which a casting cools will materially affect the shrinkage. If a casting remains hot in spots, through the influence of induced or natural heat, and is cooling at other points, there is but one solution of the question—namely, a natural condition of circumstances. But if the cooling of a naturally hot metal could be accelerated by the presence of some known alloy, we would have to recognize this phenomenon as material. During the earlier days of malleable founding but little attention was paid to the action chemically of any alloy, excepting carbon and silicon, and it must be said as good an article was produced. One after another of the elements has been taken up, and manganese is the last. In the West malleable foundries are using pig iron with 1.50 per cent. of manganese, and contrary to the experiences of the past the annealing period has been shortened, instead of otherwise. The effect of an excess of manganese has been demonstrated to no mean results. If, like in the making of Bessemer or open hearth, we were bound by strict specifications as to percentages, we would be producing a more uniform material, but with the varying practice in every concern we find the methods almost in direct contradiction to immediate local companies. Manganese will combine in any amount with iron; there is no doubt of a high percentage of same affecting the total carbon. This latter is best illustrated from the fact that ferromanganese and spiegel carry about 6 per cent. of carbon. With this high carbon, manganese still exerts its powerful influence in combining a certain portion of the carbon. In the manufacture of car wheels this has long been established practice, that manganese exerts this combining influence.

In the malleable furnace it is known that manganese will eliminate portions of the sulphur, which will pass off through the slag. In view of these deductions, would it not be possible to look upon manganese in the light of a purifier, and reason with the metallurgists of the West that a large percentage is desirable? The additional strength which will be the direct result of higher manganese will commend it to all makers of couplers and heavy work. In ligh castings it would not be so desirable, as strength is not the first requirement—rather malleability. Those concerns which manufacture small castings, such as pipe fittings, &c., and which are troubled with sulphur absorbed by the iron from fuel used, would find a decided advantage in using a higher manganese with the charge, and so flux off sulphur. The reason of a great amount of the trouble arising from small work is overannealing, and the metal presents a dirty gray fracture, due to the almost complete oxidization of the carbon.

The New Works of Beaman & Smith

A short time since Beaman & Smith of Providence, R. I., moved into their new works, which they had designed and equipped with every appliance tending to the accurate and economical production of the machine tools manufactured by them. It is to be expected that when a concern having the experience of this one decide to build the new plant will be in every way strictly up to date. This we find to be truly the case with the new works, which are shown in plan and in elevations by the accompanying drawing. Before describing in detail the plan it may be well to state that provision has been made for ample lighting in every part of every department. The power system is divided into electrical units, the motors being so placed that the main shaft may be operated from one in case of accident to another. As far as possible the tools are grouped, those of similar nature and performing work of practically the same magnitude being together, and the groups are so arranged that the work passes through the shop without any retracing to a large and well supplied erecting room in which it is loaded directly upon trucks. The several motors are supplied with electricity by the central lighting station of the city, this being the first case in Providence where power for driving a manufacturing establishment has been derived from a central station. The boiler shown upon the drawings is merely used for heating the works by means of a Sturtevant hot blast system.

Referring to the plan, Fig. 1, it will be seen that directly to the right of the entrance are the main offices, above which is a splendidly lighted drafting room, provided with all necessary appliances for blue print work. To the right and on the drafting room level are the pattern shops. To the left of the entrance on the main floor are collected the small tools, which are driven by a 15 horse-power motor located as shown in the plan, and which is placed overhead upon girders suspended from the ceiling. To the rear of this are the larger tools, planers, boring machines and the like, which are driven by two electric motors of 15 and 10 horse-power. An L, 20 feet wide and 48 feet 8 inches deep, projects from this side of the main building and contains the wash rooms, oat rooms, heating apparatus, which is placed overhead, and so on. Immediately back of this and also in the side projection is the stock room, containing racks for all sorts of raw material and also cutting off and centering machines. This room is separated from the main building by a light well, the object of which is to insure ample illumination in the planer room. Still back of this and sunk a few feet below the main level is the boiler room, which is also the blacksmith shop. Outside of the boiler room is a self supported steel stack 70 feet high. The boiler room extends back of the main room 40 feet.

The main building is 60 feet 8 inches wide by 128 feet deep. It is constructed upon a masonry foundation as shown in Figs. 2 and 3, the sides being mainly of glass and iron. Both side elevations show that the walls are almost entirely of glass, so that the lighting of the interior is amply provided for. Upon the roof of the main building is a monitor as shown. Occupying about one-quarter of the rear of the main shop is an erecting room provided with a 10-ton three-motor electric traveling crane and with a portable cable connected 3 horse-power motor. The latter is mounted upon wheels so that it may be carried anywhere throughout the works, and provision is made for supplying current through switches located at convenient intervals. The firm own considerable ground to the south and east of the buildings, so that they can at any time easily provide for additions. This emergency has been looked to, inasmuch as the south and east walls have been so designed that they may be almost entirely removed and still maintain the symmetry of the main design if at any time it should become necessary to increase the capacity.

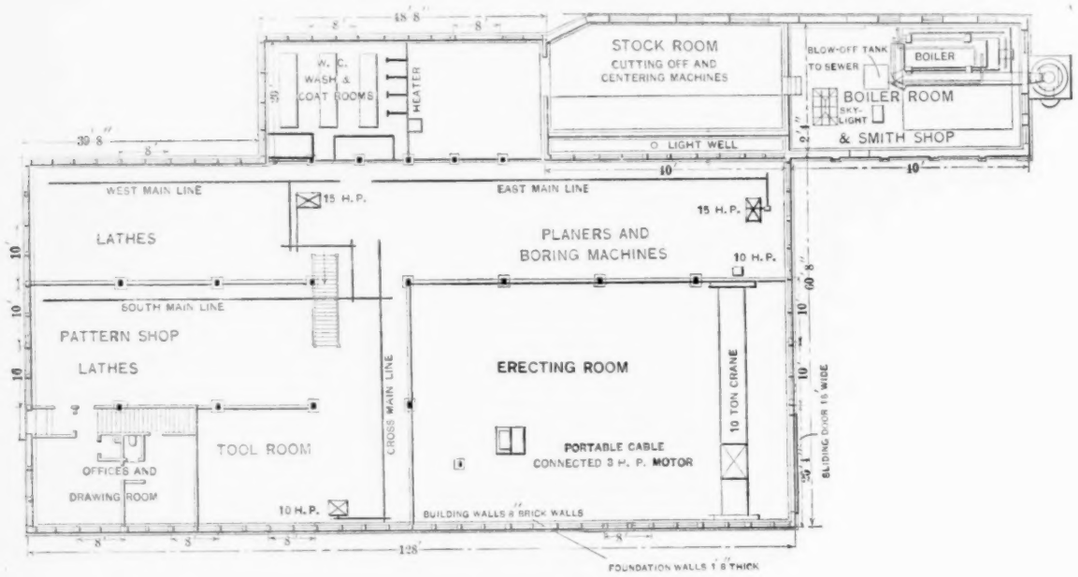


Fig. 1.—Plan.

THE NEW WORKS OF BEAMAN & SMITH.

The Excess of Imports in Great Britain.

Sir Robert Giffen, a statistical authority, has contributed recently to the Royal United Service Institution a paper entitled "The Excess of Imports," which presents views worthy of study, since Americans hope at no distant day to share in the profits which English capitalists draw from all quarters of the globe. We take from the address in question the following paragraphs:

The excess of imports is to be accounted for in the trade of a country like England in several ways, principally by the fact that England is a ship owning country and does a large business all over the world in carrying goods and passengers. This work is really in itself in the nature of an export, giving the country a credit for so much in its dealings with other countries. In addition, England is a country which earns largely com-

missions of different kinds in its trade with different countries as the commercial and monetary center of the world's trade. Last of all, England is one of the countries which has become entitled to the receipt of large interest and profits from other countries on account of capital which it has invested, and business which it carries on, in such countries, including the sums receivable by English subjects in the service of a dependency like India. In these various ways it is not difficult to compute that very large sums are receivable by this country which entitle it to an excess of imports in its trade with other countries.

In 1882 it was estimated that the sums so receivable were about £60,000,000 annually for the earnings of ships, about £16,000,000 annually for commissions, and from £70,000,000 to £75,000,000 annually for interest and profits. The corresponding figures now are estimated to have increased the earnings of ships to over £70,000,000, commissions to £18,000,000, and interest and profits probably to about £90,000,000, though the nature of the data is such that no exact statements can be made.

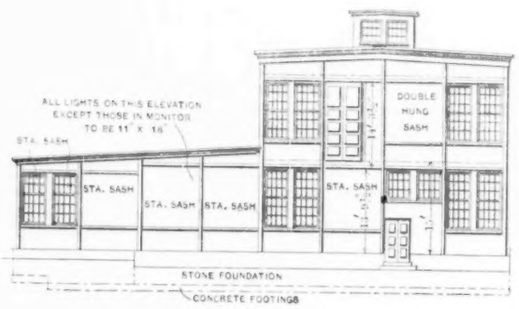


Fig. 2.—Front Elevation.

With regard to the earnings of ships, it is pointed out that the increase allowed for is very much less than the increase in the magnitude of the shipping fleet itself. In 1882 the calculation was that the shipping fleet consisted of 4,000,000 tons of sailing ships, and 2,500,000 tons of steamers, the equivalent in sailing tons of the steamers being considered at 10,000,000 tons, making the total in all 14,000,000 tons. At the present time the shipping fleet consists of a smaller number of sailing tonnage, the number of tons being now only 2,500,000. But the number of steam tons has increased to 6,500,000, equivalent on the former computation to 26,000,000 tons, and making the total of the fleet at the present time in the equivalent of sailing tonnage over 28,000,000 tons, or double what the figure was 18 years ago. If the earnings of the ships had increased proportionately to what they were in 1882, the figure would now be £110,000,000, as compared with an amount between £70,000,000 and £80,000,000 above estimated. Along with the increase of steam tonnage, however, there has been a great increase in efficiency and diminution in the cost of construction and working, resulting in a great reduction of freights, and it is not possible to estimate that the gross earnings have increased in proportion to the increase of the fleet itself.

Increase in interest and profits receivable from abroad is evident, first of all, in the recorded increase appearing in the income tax returns, which is from about £28,000,000 in 1880 to £56,000,000 in the last year for which the income tax returns have been published. The figures thus apparent do not show the whole income received in this country from abroad, but we may argue from the increase in the known and visible income that there has also been a large increase in the income which cannot be traced in the income tax returns, but which is undoubtedly receivable from abroad. Since 1880, while there have been some conspicuous defaults in foreign countries and conversions of debt reducing the interest payable, there has also on the other hand been a great and sudden increase of profits from countries like South Africa and West Australia, and this confirms the idea that there has been a great increase of the income due to this country from abroad in the last 16 or 18 years.

Seasoning Wood by Electricity.

A model plant for seasoning wood by means of electricity, says the London *Times*, is now in operation at Johnson & Phillips' electrical works, near Charlton Junction, London, the system used being the Nodon-Bretonneau. The timber to be seasoned is placed in a large tank and immersed, all but an inch or two, in a solution containing 10 per cent. of borax, 5 of resin and ¾ of carbonate of soda. The lead plate upon which it rests is connected to the positive pole of a dynamo, and the negative pole being attached to a similar plate arranged on its upper surface, so as to give good electrical contact, the circuit is completed through the wood. Under the influence of the current the sap appears to rise to the surface of the bath, while the aseptic borax and resin solution takes its place in the pores of the wood. This part of the process requires from five to eight hours for its completion, and then the wood is removed and dried either by artificial or natural means. In the latter case a fortnight's exposure in summer weather is said to render it as well seasoned as storage in the usual way for five years. The current employed has a potential of 110 volts, the consumption of energy being about 1 kilowatt per hour for each cubic meter of timber, and the greener the wood the better, because its electrical resistance is less. The liquid in the bath is kept at a temperature of from 90 to 100 degrees F. Those who are introducing the process into this country from France do not profess to be able to give a complete explanation of its rationale, though they describe it generally as a case of electro capillary attraction, but they claim that its results are satisfactory, however surprising they may seem. They even state that some woods, such as the "maritime pine" of the south coast of France, which cannot now be properly dried, will, after their treatment, be found useful and serviceable for practical purposes.

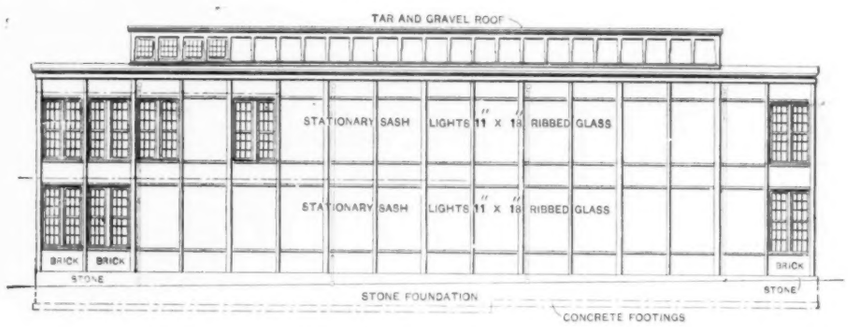


Fig. 3.—Side Elevation.

THE NEW WORKS OF BEAMAN & SMITH.

Hugh L. Thompson, consulting engineer, Citizens' Bank Building, Waterbury, Conn., has developed a business in planning rolling mill power transmission, hydraulic and other machinery and taking contracts for their installation. He has just added roof and general structural steel work to his line. During the past eight months Mr. Thompson has furnished much machinery in Connecticut for brass and copper rolling mills and rubber works. He has installed heavy and light power transmission, air compressors, hoists, &c.

The annual convention of the National Association of Structural Iron Workers will be held in Pittsburgh, commencing Tuesday, March 7. J. Ryan of Boston is president of the organization.

High Explosives in Guns and Shells.

WASHINGTON, February 21, 1899.—Captain O'Neil, Chief of the Bureau of Naval Ordnance, has prepared for the Senate Committee on Naval Affairs an interesting monograph upon the construction of guns and shells for the firing of high explosives. The text of Captain O'Neil's remarks is the fact that the Senate committee proposes to investigate the merits of the so-called Gathmann system of throwing high explosives, with reference to its possible use on the new coast defense monitors. As the monograph covers practically all the experiments in throwing high explosives recently made in this country and abroad, nearly all of which have been conducted in secret, it will be read with special interest. Captain O'Neil says:

I take it for granted that this committee desires such information as will enable it to pass an intelligent judgment as to the merits of the devices and system of the Gathmann Torpedo Company for throwing high explosives, with special reference to their adaptability, or otherwise, for use in the navy, and in this connection I beg to state that I have no preference or prejudice for or against any particular system or method, being concerned simply for the welfare of the navy in general and for the branch of the service I represent in particular.

I am anxious that our navy should possess the most powerful and efficient guns that can be used to advantage and with safety to ourselves, and that can inflict the greatest amount of damage upon our enemies in time of battle, and, to this end, have within the past few months had new designs made for guns of all calibers, calculated to place our naval artillery in the front rank and equal to any in the world; but these are not guns for firing high explosives.

It is impossible to give proper consideration to the Gathmann or any other system of firing high explosives without some general consideration of the broad subject itself, the question involved being of much greater importance than is that of determining the superiority of any kind of gun or projectile over another; and it is a matter for serious consideration whether, for the purpose of gaining some possible advantage in the explosive effect of a projectile, it is, in the present state of the art, prudent or desirable to incur the greatly increased risks to our guns, ships and men attending such use.

The question of firing high explosives from ordinary guns with powder impulse has for many years attracted much attention, both at home and abroad, and experiments have been made attended with more or less success; but the risks and dangers attending the storage and use of high explosives, under service conditions, have deterred artillerists from taking the grave responsibility of introducing them into the service.

The only instance in this country where large caliber shell charged with high explosives have been introduced into service is the case of the "Vesuvius" in the navy, with her three pneumatic guns, and a few guns of similar type have been mounted by the War Department at Sandy Hook and at San Francisco. These guns, using compressed air for giving impulse to their projectiles, give low velocities, and consequently short range even at high angles of elevation; therefore their sphere of usefulness is quite limited. The shells are charged with wet gun cotton or explosive gelatine, and many rounds have been fired without accident.

A few field guns for firing high explosives have been made by private parties in which air is compressed by a powder charge, but the amount of explosive fired is very small, and at least one of these guns has failed on trial at Sandy Hook.

In France extended experiments have been made with shell charged with a high explosive called melinite. One series covered the firing of 200 14 cm. (5½-inch) shell, and the results obtained were, in the main, of a satisfactory character; and it is reported that the French have shell charged with melinite for service, but it is very difficult to obtain reliable information on these subjects. Melinite is simply an adaptation of picric acid, which, by itself, has always been considered as an imperfect body, not capable of explosion without an admixture of an oxidizing substance, like chlorates, nitrates, &c.; and some other substance is undoubtedly compounded with picric acid in the French explosive melinite.

The British are reported to have used shells charged with lydite in their field guns during the late Egyptian campaign. Lydite, no doubt, bears much resemblance to melinite. It is not known that the British or any other powers use high explosive shells of large size, either in the land or naval service; but not long ago a distinguished English authority publicly stated that in deference to public opinion a few shells charged with high explosives had been placed on board the vessels of the Channel Squadron, and the general opinion was that they would all be thrown overboard if the vessels went into action.

In this country some interesting and promising experiments have been made with a high explosive called jovite, which is very much on the same order as melinite.

Gun cotton being one of the safest high explosives when wet, has attracted much attention, but it must be kept wet, as when dry it is very senstitive and dangerous.

Of course, the only object in using high explosives is on account of their greater destructive effect as compared with gunpowder. Unfortunately, most explosive compounds coming under this category are dangerous in themselves, some being sensitive to shock and others liable to decompose. All of them require to be exploded by detonation to obtain their maximum effect. The detonators, being usually made of fulminate of mercury, are exceedingly sensitive, and their necessary use in connection with a charge of high explosives gives to it a dangerous character, unless some special device, such as a safety chamber to contain the detonator, is provided. This the Gathmann Torpedo Company have apparently accomplished for use in connection with wet gun cotton, which is very insensitive to shock, so much so that to explode it a primer of dry gun cotton of several ounces in weight is necessary, as well as the fulminate of mercury detonator. How the Gathmann safety chamber would answer with an explosive more sensitive than wet gun cotton has not been ascertained. The fact that a safety chamber is considered an indispensable feature is an admission that premature explosion of the detonator may be expected at times; and experience has shown that such will occasionally occur, and, while no explosion of the shell may follow if the safety chamber is attached, it is rendered inoperative and will not explode on impact.

All the Gathmann experiments have been made with wet gun cotton, and it has been shown that it is very insensitive to shock, and is capable of withstanding the roughest kind of treatment if not acted upon by a detonator, but in order to safely get its projectiles out of the guns it is necessary to use about 35 per cent. of water, which, of course, reduces the capacity of the projectile by that amount in weight. With such a large percentage of moisture it is difficult to obtain an explosion of high order, and in many of the experiments made with Gathmann shells considerable quantities of unconsumed gun cotton have been picked up near the scene of the explosion.

Persons unfamiliar with the action of the present type of projectiles, charged with gunpowder, are apt to underrate their power of destruction, and also to overestimate that of wet gun cotton. It is a fact that wet gun cotton is a more powerful explosive by far than ordinary gunpowder, but, exploded in the air, it is by no means as powerful as generally supposed. If confined, its action is exceedingly violent, and a small quantity exploded in the bore of a gun would ruin it, and a large charge, under such conditions, would probably completely wreck a gun, turret, and possibly fatally injure a vessel herself, whereas an ordinary shell charged with gunpowder may break up and explode in a gun with no injury to it, perhaps, beyond disfiguring the rifling.

It is generally recognized that if it is desirable to throw high explosives at all, it should be done on a large, or at least on a moderately large, scale; and herein lies the danger, that if a premature explosion of the shell should take place while it was still in the gun the destruction to life and property would be appalling. It is well enough for inventors and persons who have no responsibility in the matter to say that an accident cannot occur, but, unfortunately, accidents with explosives do happen every now and then from most unexpected causes. No amount of vigilance on the part of an inspector might be able to detect a fatal flaw in the metal of which a shell was made and which might cause its destruction in the bore of a gun, nor in the present state in the art of powder making can it be guaranteed that an expected pressure in the chamber of a gun will not be exceeded. Then, again, it can easily be understood how troublesome and inconvenient it is to carry on board ship a lot of shells which periodically must be weighed to see that they contain the proper percentage of water.

The Gathmann Experiments.

Let us see, now, what the Gathmann Torpedo Company have accomplished during a series of experiments extending over a period of two years, at an expense to the Government of probably $100,000.

They have established the fact that large charges of thoroughly saturated gun cotton can, under certain conditions, be fired at moderately high velocities from ordinary high powered rifled guns, with a considerable degree of safety.

They have developed a safety chamber to contain the detonator and dry primer, and shown on several occasions that the detonator and dry primer can be exploded in said chamber without exploding the main shell charge of wet gun cotton.

They have on several occasions fired large shell containing wet gun cotton, at moderate velocities and rather low chamber pressures, and have detonated such shell, in some instances, in impact.

They have shown that large charges of wet gun cotton are difficult of good detonation at the point of impact, and that the destruction, in several cases, was by no means as great as might have been expected.

They have fired some armor piercing projectiles through armor plates and exploded their bursting charge of wet gun cotton in rear of the plates. I, myself, saw at Sandy Hook on January 19, 1899, a 12-inch armor piercing shell charged with wet gun cotton fired at a soft steel plate about 12½ inches thick. The plate was small and was broken up, and the shell exploded in rear of it. This, however, has been eclipsed at Indian Head, where, on November 3, 1897, a 10-inch armor piercing shell charged with jovite was fired with a velocity of 1860 foot seconds through a 14½-inch face hardened nickel steel plate, the shell exploding in rear of plate. This shell contained 8¼ pounds of jovite, which costs but 22 cents per pound (as against 60 cents for gun cotton), and was exploded with a simple fuse, costing 18 cents, no detonator being used. This was followed by the firing of a 10-inch semi-armor piercing shell, containing 28 pounds of similar explosive, fired with a velocity of 1925 foot seconds against this plate (which was quite large, being 17½ x 8 feet) at a point where it was 16 inches thick. The shell penetrated to a depth of 12 inches, and burst with great violence, due to the heat generated by its distortion on impact, there being no fuse. The plate, which had received four impacts previously, was broken in pieces. The latter shell was fired principally to show that a good sized bursting charge could be safely thrown from a gun at high velocity.

These were two of several experiments of like character made at Indian Head with different calibers. No special devices were necessary to accomplish the foregoing results, and the explosive, once placed in the shell, required no further attention; not so, however, with wet gun cotton, which must be kept wet.

While success has been reached in several instances by the Gathmann Company, there has been a long series of failures, which should be taken into account in a general consideration of the subject, and the likelihood of their recurrence should be carefully weighed.

Up to within a few months ago the company persisted in the use of a very long, expensive and elaborately constructed shell. For a 12-inch gun this shell was from 5 to 7 feet in length, and contained from 200 to 300 pounds of wet gun cotton. These long shells proved inaccurate in flight, and the company wisely abandoned them for shells of about ordinary length—namely, 4 feet, and of simpler design. But in consequence of this change the explosive charge is greatly reduced, and to compensate for it the company now propose to use guns having very large diameter of bore and projectiles relatively light in weight for the caliber, in order to obtain high velocities with low pressures.

It is but justice to myself to say that I resisted the appeals of the company to favorably consider the type of shell which has now been abandoned, though at the time it was represented as being entirely satisfactory, and the company urged that a number be made and placed on board the monitor "Puritan."

The only thing I can see now to which the Gathmann Company have any legitimate claim is the safety device for containing a detonator and primer and a new shape of shell, which may turn out to be a good thing, or otherwise.

I have yet to learn of any official approval of any of the Gathmann devices of the kind now under consideration for service use, and I am of the opinion that nothing has been developed by them which is of practical value for naval purposes.

I do not wish to be understood as being opposed to the use of high explosives for naval purposes, but I do not think we have yet reached a point in the development of the art which warrants our proceeding to do so without the utmost caution and much further investigation of the subject.

The Gun Proposed.

As regards the adoption of the 15-inch Gathmann gun and projectiles for the harbor defense monitors now under construction, I am constrained to say that such a scheme does not meet with my approval, because it would, in my opinion, be an unwarrantable proceeding to introduce into the service, without the most exhaustive and conclusive tests, a new type of gun and projectiles differing so radically in character from those now in use, and which are so thoroughly understood. In the first place, special guns designed for a particular use are not likely to be as useful as those intended to meet the ordinary requirements of the service. Secondly, no new type of gun or shell should be put in service until after an exhaustive test at the proving ground, nor is it safe to say that experiments safely conducted on a small or even on a large scale can be as safely done on a much larger scale.

So far as the proposed gun is concerned (though it exists only on paper at present), there is no difficulty about designing and constructing such a one as would probably fulfill the conditions sought. It is not so much the gun as the service it is to be put to that is objectionable—namely, the firing of very large masses of wet gun cotton, which might be safely accomplished, but in case of accident the consequences would be too fatal to contemplate. Officers and men in service trust implicitly in the wisdom of those whose duty it is to provide weapons for them to use, and nothing would justify anything like recklessness in such fatal matters.

Therefore, I am of the opinion that before we embark in so perilous and uncertain an enterprise exhaustive trials should be made on shore to demonstrate the safety, accuracy and efficiency of any weapon it is proposed to use afloat.

The proposed scheme of large caliber guns, with projectiles of relatively light weight for the caliber, is neither new nor novel. It is well known that with comparatively low chamber pressures a high muzzle velocity can be obtained with such guns, but this is at the expense of long range, except at high angles of elevation. The gun proposed, however, would have quite an effective range. The guns designed by the department for the new monitors (and the forgings for which have already been ordered) are of 12-inch caliber and of new type, calculated to give great range and penetrating power, with flat trajectory.

As the War Department has been carrying on experiments for a considerable time with the different types of Gathmann projectiles, it would be interesting and instructive to know how the ordnance officers of the army regard them and whether any of the schemes presented meet with their approval.

Aside from practicability the question of expediency must be considered, and, in my judgment, it is not expedient to adopt for service at this time any scheme that has as yet been presented for firing high explosives in large masses at ordinary velocities, certainly not because the Gathmann Torpedo Company have succeeded in safely firing a few shells charged with wet gun cotton; and, as the army is experimenting with the Gathmann system, there seems to be no reason why another department of the Government should pursue the same line of investigation.

While the foregoing remarks do not by any means exhaust this important subject, I do not desire to trespass further on the time and patience of the committee, but as a matter of record, and to more fully cover the ground, and as some members of the committee may not be familiar with the history of this matter, the following remarks of an explanatory character, and giving an account of some of the tests made, are appended:

An act of Congress, approved June 10, 1896, provided $50,000 "for testing methods of throwing high explosives from guns on board ships with the ordinary velocities," this being an item in the regular naval appropriation bill for the years 1896 and 1897.

While the particular line of experiments was not specified, it was understood at the Navy Department that they were to be in connection with the so-called Gathmann gun and projectiles. Accordingly, an improvised 12-inch gun was made of a tube intended for one of the 13-inch guns of the battleship "Kearsarge," the intention being to use this tube for its original purpose after the Gathmann experiments were concluded, in case it survived them. The gun was rapidly pushed to completion at the Washington Navy Yard, and at the same time a number of projectiles were made of a special type, designed by Mr. Gathmann. The gun was completed about January, 1897, and was sent to the naval proving ground at Indian Head, and mounted on a proof mount belonging to the station. It was first fired about February 4, 1897, the shells being filled with a colored liquid, and fired through light wooden screens. The shells were found to have too thin walls, as they broke up after leaving the gun, and some new shells, having thicker walls, were made, and fired about May 14, 1897. These shells gave better results, and various experiments were made to test the details of the shell, primer, &c., and finally there remained but to test the loaded projectile in the gun. This was done on June 9, 1897. The shell was of forged nickel steel, and weighed, with its charge of wet gun cotton, 950 pounds, the weight of the gun cotton being 307 pounds.

This shell, like all the Gathmann shell of that date, had a movable piston-like base, which was considered one of its special features. On firing the gun there was a simultaneous explosion of the gun cotton shell within the bore, which completely wrecked the gun and its mount, rendering it necessary to purchase a new tube for the "Kearsarge." The cause of this premature explosion has never been satisfactorily accounted for, but is sup-

posed to have been due to the faulty action or design of the primer and detonating charge. After this a number of experiments were carried on at Indian Head, with projectiles of various kinds, which were fired from an old muzzle loading 8-inch converted rifle, their chief object being to show that long columns of wet gun cotton could be safely fired with powder impulses at moderately high velocities and pressures, and these experiments were attended with more or less success.

Detonating Wet Gun Cotton on Armor Plate.

Further experiments were made in detonating large masses of wet gun cotton in contact with armor plates. In these experiments the gun cotton, containing only about 13 per cent. of moisture, was placed in contact with the plate, and care was taken to secure an explosive of a high order. The results were not as marked as were expected, and in one instance they were surprisingly insignificant. A heavy plate was, in one of the above cited cases, broken by the explosion of 500 pounds of wet gun cotton, but as no comparison was made with any other explosive it is difficult to arrive at any definite conclusion as to what would have happened had 500 pounds of powder been exploded under like circumstances. In another of the cases 300 pounds of wet gun cotton was exploded against a plate with practically no effect.

This appropriation having been expended, the Bureau of Ordnance, on October 14, 1897, notified the Gathmann Torpedo Company to that effect, and that no further experiments could be made. Subsequent to this the parties interested applied to the War Department, and a number of experiments were carried on under its auspices.

On July 5, 1898, the Chief of the Bureau of Ordnance of the Navy recommended to the Secretary of the Navy that a joint board of army and naval officers be ordered "to consider the question of firing projectiles charged with high explosives from the guns of the military service of the United States." The Gathmann Torpedo Company requested to be heard by this board, and were accorded the opportunity, and, in making their report, on July 14, 1898, the board concludes with the following remark: "It is considered proper and pertinent to record its (the board's) opinion that the Gathmann system, if successful, would have a limited field of action, as compared with modern ordnance, and the tests thus far made with this system have not shown results that warrant any further expenditure by the Government in its development." After this, in October, 1898, at the request of the parties interested in this scheme, two naval officers of marked ability were directed by the Secretary of the Navy to visit Sandy Hook, to investigate the extent of success that had attended the Gathmann experiments. These officers reported to the Secretary of the Navy, under date of November 4, 1898, the result of their investigations, and concluded as follows: "We are, therefore, of the opinion that the Gathmann shell is not sufficiently developed to justify its adoption by the Government."

Among the many experiments made at Sandy Hook, the following are cited from the official reports to show how little damage was done by three 12-inch Gathmann shells fired against one plate: "On May 31, 1898, a 12-inch shell, weighing 844 pounds and containing 264 pounds of wet gun cotton, was fired at a nickel steel plate 10 inches thick and 8 feet long by 4 feet high. The shell struck the plate and exploded, whirling the plate around and dislodging it from its supports, but doing it no damage. Considerable unconsumed gun cotton was picked up near the plate, but apparently most of it exploded.

"On June 10, 1898, another 12-inch shell, weighing 905 pounds and containing 299 pounds of wet gun cotton containing 30 per cent. of moisture, was fired at the same plate. The shell exploded on impact, and while the plate was forced through the sand some 20 feet, it was but slightly injured—merely bulged on the back to a slight extent. Some unconsumed gun cotton was picked up near the plate, but not as much as in the preceding experiment.

"On June 16, 1898, another 12-inch shell, weighing 960 pounds and containing 248 pounds of wet gun cotton (30 per cent. moisture), was fired at the same plate, but, owing to a premature explosion of the detonator the shell was not exploded. It struck the plate, however, and knocked it down.

"It will be seen that while this plate was struck three times by heavy 12-inch shells, containing large charges of wet gun cotton, two of which exploded on impact, it was not injured aside from the slight bulge referred to. It is positively certain that an ordinary armor piercing shell without any bursting charge, or a semi-armor piercing shell containing gunpowder, would have wrought greater destruction to this plate than did the gun cotton shells.

"On September 23, 1898, at Sandy Hook, a 12-inch shell of the same type as those used in the three foregoing experiments, weighing 945 pounds and containing 210 pounds of gun cotton completely saturated, was fired at this same plate, which was supported by an oak frame heavily backed with sand. This plate, which had already been struck and slightly bulged, as previously described, was struck by the shell, which exploded on impact, breaking the plate in two pieces through the point of impact and the depression just mentioned, and an examination of the fracture revealed an old crack through the depression, extending beyond its edges. An ordinary uncharged 12-inch shell would, beyond doubt, have smashed this plate as effectively as did the gun cotton shell.

"On December 2, 1898, the first of the new type of Gathmann shells, tapering at the front end, was tested in a 12-inch gun at Sandy Hook. It weighed 744 pounds and contained but 116 pounds of wet gun cotton. It was fired against a 10-inch nickel steel plate, and exploded on impact, breaking the plate in two pieces, both of which were thrown a considerable distance, and the target structure was demolished. This was a very successful shot, but an ordinary 12-inch shell would have wrecked the plate, but would not have made as much havoc, probably, with the sand and oak backing.

"Another trial was that of a 12-inch mortar shell, weighing 1000, and containing 49 pounds of wet gun cotton. This shell was fired against a 4½-inch nickel steel plate, and perforated it, as might be expected; but the shell failed to explode and was recovered whole in rear of the target, the fuse having been blown off.

"Two more of the new shells were fired to show that they would explode on striking the water. One failed entirely, and the other exploded, not on first impact, but on ricochet."

These instances are cited as being among the most important of the many experiments made, and it will be seen that they were attended with but limited success, except in one particular—namely, there were no accidents due to premature explosion in the gun.

It may be thought that in citing the foregoing experiments those have been selected which are unfavorable in character to the exclusion of others more favorable, but such is not the case; they are selected as being the most interesting and important. W. L. C.

Trade Conditions in Mexico.

In a recent report to his Government the Secretary of the British Legation in the City of Mexico makes the following remarks regarding the conditions to be met in that country by foreigners desirious of introducing their goods into the markets of the republic: "British trade in Mexico itself can only be pushed by really competent agents, and if it should be beyond the means of any one house to offer acceptable terms several firms should combine to employ one man at a central point, and allow him to engage correspondents in other places. It should also be borne in mind that in Mexico a large amount of business is obtained simply through personal friendships, and that the agent should therefore be thoroughly conversant with the people and their ways. A stranger to the country will be at a great disadvantage in this respect. The cheaper article is, as a rule, the one most suited to the Mexican market. Cheapness must, however, be combined with superior finish, and here, as elsewhere, articles such as hardware imported from Germany are stated to surpass the corresponding British manufactures in this respect. Moreover, a light and comparatively cheap class of machinery is frequently required. It may not be so good as the machinery usually turned out in England, but it works well enough, and a large saving is effected both in first cost and in the expense of transport."

Western Foundrymen's Association.—The regular monthly meeting of the Western Foundrymen's Association was held Wednesday evening, February 15, at the Great Northern Hotel, Chicago, Vice-president A. M. Thompson in the chair. The following topical questions were brought up for discussion: "What is your experience in regard to sand burning on castings so hard that it must be chipped off? What causes it and what can be done to prevent it?" "What has been your experience with the use of core compounds?" Both of these questions were discussed to a considerable extent, and it was decided to have the secretary secure a paper on core compounds, to be presented at an early meeting of the association.

The American Steel Barge Company of West Superior, Wis., have received a contract from the Bessemer Steamship Company (Rockefeller interest) to build two steel barges of 8000 net tons capacity each. They are to be ready for the opening of navigation in 1900. They are to be 460 feet long, 50 feet beam and 29½ feet in depth. A third vessel, a steamship, will likely be let to F. W. Wheeler Company of West Bay City, Mich.

The Dodge Capillary, Chain and Ring Oiling Bearings.

The Dodge Mfg. Company of Mishawaka, Ind., are making three styles of bearing, here illustrated, which they designate as capillary, chain and ring oiling. In the first, which has passed through a series of long and severe tests, the oiler proper is made of hardwood, with light transverse saw kerfs cut alternately from either side, which, when the block is compressed in the binder, form a series of vertical triangular slots which act as surface for capillary action. This bearing, Figs. 1 and 3, has no running part to stop or get out of order, and as the oiler will not clog or carry dirt the shaft is continually supplied with pure oil, which continues under any strain and at any temperature. These bearings have been run eight months with one filling of oil, on a 2 15-16-inch shaft running 150 revolutions per minute, 24 hours a day.

The chain oiling bearing, Fig. 4, has an oil chamber so constructed that the presence of grit, dirt, &c., is obviated. The chain does not come in contact with the bottom of the reservoir at any point. The oil is drawn vertically to the top of the shaft and spreads through channels to all parts of the bearing and thence back to the reservoir. The reservoirs are large enough to hold sufficient oil for a long run.

The system of lubricating by ring oiling bearings is effected by means of tempered steel rings which are bent to circles enough larger than the diameter of their shaft to allow their lower portion to run constantly in oil. As the shaft revolves the rings revolve on them and carry to the journals sufficient oil for thorough lubrication. Any surplus oil is removed by scrapers or wipers at each end of the bearings and then drops back into the oil receptacles.

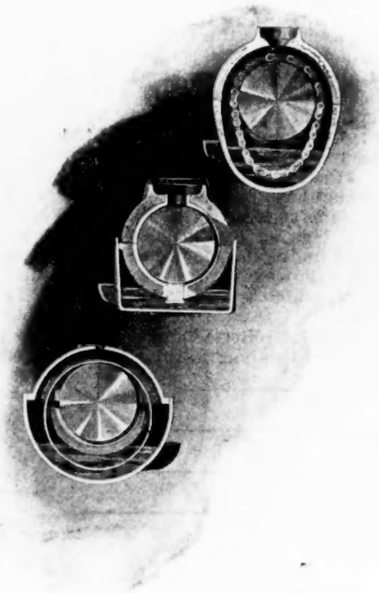


Fig. 1.—Chain Oiling, Capillary Oiling, Ring Oiling.

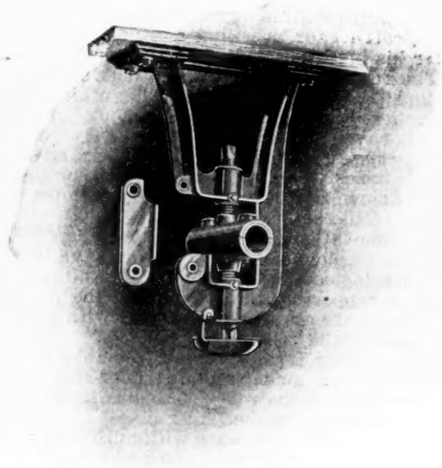


Fig. 2.—Hanger.

Fig. 3.—Capillary Oiling Hanger.

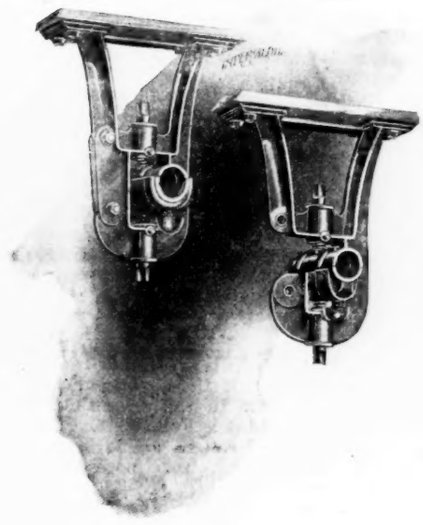


Fig. 4.—Chain Oiling Hangers.

THE DODGE CAPILLARY, CHAIN AND RING OILING BEARINGS.

The hangers, Fig. 2, made by the company are simple in design and constructed upon lines of great strength. They have machine finished bases, and are made to be used with or without the link.

A New Balance.—An improved form or arrangemen of chemical balance is announced as having been constructed by R. Hase of Hanover, connected with the metallurgical laboratory at Hamburg, Germany, the peculiar serviceableness of which consists in its marking at once the approximate weight of the substance—accomplished by an additional pointer, the latter occupying an inclined position and playing over a specially graduated arc. The pointer and the additional device are put in

gear by means of a button on the glass case of the balance. In practice the substance is put in one pan and a number of weights in the other, the pointer then marking how many grams are still wanting, to within a few centigrams; the rest of the weighing can easily be performed with the help of the rider only in the usual manner. Such a method as this, it is said, is particularly convenient for the purpose of weighing predetermined quantities; the platinum dish, for instance, can be filled while standing on the pan without arresting the balance, until the additional pointer indicates that the weight is almost correct. The addition in question is said not to complicate the construction much, and adds but little to the cost.

The Hyatt Roller Bearing.

The Franklin Institute of Pennsylvania has awarded the John Scott legacy premium and medal to John W. Hyatt for his invention of the elastic spiral antifriction roller. The report of the committee making the examination and tests is as follows: The utility of antifriction rollers is well known among mechanics, and they have been very extensively employed on many classes of machinery. Their advantages and the obstacles sometimes encountered in their use are so well known that it is unnecessary to enter into an explanation of the subject.

The sole innovation presented by the rollers of J. W. Hyatt is the employment of an elastic, spirally wound tubular roller, instead of the solid cylinder hitherto used. The mode of supporting the rollers, and the frames for confining them, are essentially identical with those long in use with the solid rollers.

The Hyatt roller in appearance resembles a closely wound spiral spring made from a strip of steel of a rectangular section, and the roller consequently has all the flexibility of a similar spring.

An experience of many years with antifriction rollers by a member of this committee, and under many diverse conditions, justifies the assertion that one of the principal causes of failure on the part of antifriction rollers which have been accurately made and well mounted is due to an unequal distribution of pressure on the face of the rollers, causing distortion in detail or gradual destruction of the rollers. This inequality of pressure may be due to slight deflection of shafts, or yielding of supporting surfaces, or the axes of rollers and shafts may not be exactly parallel; in fact, many different causes frequently act to prevent that perfect distribution of pressure over the whole length of the roller which is essential to its longevity.

The pressure that rollers will safely endure depends on the diameter of the roller, on the hardness of the material in the rollers and of the surface they bear on, and also on the rapidity of the motion.

The endurance and frictional resistances of rollers under varying conditions of dimensions, material and speed have been the subject of considerable experiment, which it is not necessary to quote further, as in this investigation the only question under consideration is the relative merits of the solid and the spiral formed roller.

Experiments.

In order to obtain experimental information on the subject, a series of experiments was made under several conditions, and the result of these experiments, which involved considerable time in the execution, are condensed into the attached table. Four of the Hyatt spiral rollers and four solid steel rollers, all uniformly ¾ inch diameter and 10 inches long, were used in the tests. The Hyatt rollers were formed of strips of steel ½ inch wide and ⅛ inch thick, and were apparently of spring steel, although we are informed that a softer grade of steel is used. The solid rollers were of a softer grade of steel, about 70,000 pounds tensile strength. The harder material in the spiral roller rendered it less liable to abrasion, but would not affect the resistance to rolling, so long as no abrasion occurred. These rollers were placed between three plates, as shown in the sketch, and the whole set placed between the plates of a testing machine, and vertical pressure applied. While under this pressure a horizontal force was applied to the plate B and the resistance to rolling accurately measured by its reaction on the platform of a scales. The faces of the plates A and *a* were planed, and in one series of experiments both faces of plate B. In the other series both faces of plate B were rough—that is, as they left the rolling mill. Increasing vertical pressures were applied, up to a maximum of 550 pounds per lineal inch of roller, when the apparatus employed would not permit a higher pressure, owing to the resistance to motion of the plate B when solid rollers were employed, but under the same conditions with the spiral rollers it was possible to place a pressure per lineal inch of 700 pounds.

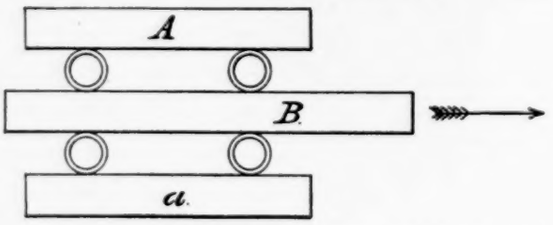
As the experiments were all made between the rigid plates of a machine in which the pressure was applied by screws, and registered on a scale beam, it was suspected that this rigidity might be more favorable to the spiral than to the solid roller. Therefore, an experiment was made in which the pressure was applied by a weight acting on a lever, and due to gravity only, with the following result:

Total pressure applied.	—Resistance to motion of plate B.— With spiral rollers.	With solid rollers.
2,000 pounds.	9 pounds.	26 pounds.
3,000 pounds.	17 pounds.	34 pounds.

These results correspond closely to the first experiments, and prove that the manner of applying pressure was not the cause of the difference in resistance to rolling.

It will be observed by the table that the resistance to motion was much less with the spiral than with the solid roller under all the pressures employed, both with the smooth and the rough center plate.

This reduction of rolling resistance varied from 10 to 66 per cent., and averaged 51 per cent. less with the smooth center plate, and 23 per cent. less with the rough center plate. Observations were likewise made to ascertain the thoroughness of the bearing contact between the plates and the rollers. With the rough center plate the incomplete bearing of the solid roller was plainly discernible, and under the maximum pressure employed the solid roller showed indications of grooving at the point of contact, which is the usual manner of failure of antifriction rollers. On the contrary, under the same conditions the spiral rollers showed a complete bearing throughout their entire length, the elasticity of the roller



THE HYATT ROLLER BEARING.—METHOD OF TESTING.

permitting it to follow the sinuosities of the rough plate and maintain contact.

The pressures employed in the experiment were about as high as good practice tolerates with the slowest motion, and very much higher than is permissible with the velocities usual in ordinary shafting.

The spiral rollers are now regularly manufactured and successfully applied in practical use. The high pressure borne by the spiral roller without permanent deformation, its low resistance to motion as compared to the solid roller, and its elastic adaptation to inequalities of surface, were clearly exhibited by the experiments.

The sub-committee which conducted this investigation was composed of James Christie, chairman; Hugo Bilgram, Spencer Fullerton, J. Sellers Bancroft, H. W. Spangler.

Comparison of Spiral and Solid Rollers.—Table I

Total pressure on rollers. Pounds.	Pressure per linear inch of roll. Pounds.	Planed plates. Spiral roller coef. of friction.	Planed plates. Solid roller coef. of friction.	Planed plates. Ratio of cols. 3 to 4. Per cent.	Rough plates (rolled). Spiral roller coef. of friction.	Rough plates (rolled). Solid roller coef. of friction.	Rough plates (rolled). Ratio of cols. 6 to 7. Per cent.
1	2	3	4	5	6	7	8
1,000	28	0.005	0.013	38	0.018	0.030	60
2,000	55	0.0055	0.0125	44	0.019	0.026	73
3,000	83	0.005	0.0116	43	0.019	0.021	90
4,000	111	0.0045	0.012	38	0.017	0.021	81
5,000	138	0.004	0.0116	34	0.015	0.022	68
6,000	166	0.0045	0.0117	38	0.016	0.022	73
8,000	221	0.0056	0.010	56	0 017	0.024	71
10,000	277	0.0063	0.0113	56	0.023	0.026	88
12,000	332	0.0082	0.018	46	0.021	0.028	75
14,000	387	0.012	0.0195	61	0.020	0.029	69
16,000	442	0.014	0.021	67	0.024	0.029	83
18,000	498	0.015	0.024	62	0.025	0.029	86
20,000	554	0 016	0.032	50	0.029	0.035	83
22,000	609	0.020	....	.. ....	0.031	.....	.....
24,000	664	0 025	.....	.....	0.033	.....	....
25,000	700	0.029	.....	.....	0.034	.....	.....

Percentage of coefficients of rolling friction of spiral rollers to solid rollers:

Plates Planed.

	Per cent.
Least	34
Greatest	67
Average	48.7

Plates Rough.

	Per cent.
Least	60
Greatest	90
Average	77

Test of Hyatt Spiral and Solid Steel Rollers.—Table II.

Total pressure on rollers in pounds.	Pressure per lineal inch of rollers in pounds	All plates planed. Hyatt spiral roller. Pounds to move plate B.	Hyatt spiral roller. Coef. of friction.	Solid roller. Pounds to move plate B.	Solid roller. Coef. of friction.
1,000	28	5	0.005	13	0.013
2,000	55	11	0.0055	25	0.0125
3,000	83	15	0.005	35	0.0116
4,000	111	18	0.0045	48	0.012
5,000	138	20	0.004	58	0.0116
6,000	166	27	0.0045	70	0.0117
8,000	221	45	0.0056	83	0.010
10,000	277	63	0.0063	113	0.0113
12,000	332	98	0.0082	213	0.018
14,000	387	168	0 012	273	0.019
16,000	442	220	0.014	334	0 021
18,000	498	273	0 015	438	0.024
20,000	554	323	0.016	638	0.032
22,000	609	458	0.020	Not obtainable.	
24,000	664	555	0.025		
25,200	700	739	0 029		

Plate B. A rolled plate not planed. Hyatt spiral roller. Pounds to move plate B.	Hyatt spiral roller. Coef. of friction.	Solid roller. Pounds to move plate B.	Solid roller. Coef. of friction.	Spiral roller deflection.	Remarks.
18	0.018	30	0.030	0.002	
38	0.019	53	0.026	0 003	
58	0.019	63	0.021	0.004	The deflection means the flattening or reduction of vertical diameter of the spiral roller.
73	0.015	110	0.022	0.0055	
99	0.016	134	0.022	0.0055	
138	0.017	194	0.024	0.006	
228	0.023	260	0.026	0.006	
260	0.022	338	0.028	0.006	
293	0.021	412	0.029	0 006	
378	0.024	463	0.029	0.006	
458	0.025	518	0 029	0.006	
578	0.029	708	0.035	0.006	
698	0.031	Not obtainable.		0.006	
808	0.033			0.006	
878	0.034			0.006	

The Eight-Hour Labor Bill.

WASHINGTON, February 21, 1899.—The Senate Committee on Education and Labor has once more reported the so-called eight-hour labor bill to the Senate with certain amendments but without recommendation. A strong effort will be made by friends of the bill to pass it before the end of the present session, but the prospect of getting it through is not encouraging even to the most radical advocates of the measure. This bill has had an extraordinary career in the present Congress. It was passed by the House practically in the form in which it was reported by committee. On May 18, 1898, it was sent to the Senate and referred to the Committee on Education and Labor. On June 29 it was reported to Mr. Kyle, chairman, with amendments, but without recommendation. On January 5, 1899, at the request of Mr. Kyle, it was recommitted to the committee, and on February 17 it was reported by Mr. Turley "with amendments, but without recommendation." These stages of progress indicate clearly the vicissitudes through which the measure has passed. Its friends have been unable to secure a majority vote on any proposition that would add to the prestige of the bill or accord it any measure of indorsement. At the same time they have been able to get the bill before the Senate, which is regarded as an advantage over having it slumber in a pigeonhole.

The bill as it now stands consists of four sections. Section 1 provides that "the time of service of all laborers, workmen and mechanics employed upon any public works of or work done for the United States or any Territory or the District of Columbia, whether said work is done by contract or otherwise, is hereby limited and restricted to eight hours in any one calendar day," and contractors or sub-contractors are forbidden to employ labor in excess of eight hours per day. To this section the committee has added this proviso: "Except when, in the opinion of the head of the department having the work in charge, an emegrency exists."

Section 2 provides that all contracts made on behalf of the United States shall contain a stipulation forbidding work to be done thereunder in excess of eight hours per day, with a penalty for each violation of this stipulation of $10 for each laborer for each day in which he shall labor more than eight hours. To this section a proviso has been attached identical with that added to Section 1.

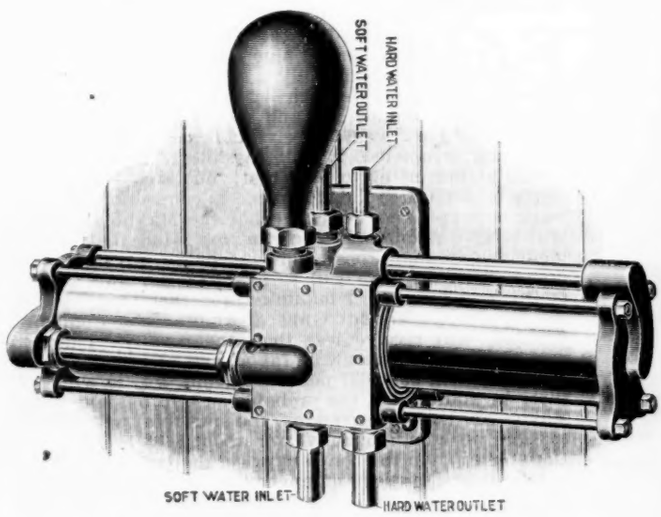
Section 3 imposes a penalty of a fine not to exceed $500 and imprisonment not to exceed one year upon any officer of the Government who shall violate the law.

The most important amendment has been added to Section 4, which originally exempted from the operation of the act all existing contracts and the labor of soldiers and sailors of the army and navy and seamen on sea going vessels, but to which the committee has added the following: "But nothing in this act shall apply to the transportation of mails, merchandise or passengers or to common carriers in any way; nor shall this act apply to contracts for the purchase of the ordinary supplies of the Government, whether manufactured to conform to particular specifications or not; nor shall it apply to contracts for such materials as may be usually purchased in the open market."

It will be observed that the amendments which have been voted into the measure by the majority of the committee have materially modified its provisions, but even with these changes it has not been possible for the friends of the bill to summon strength enough in committee to secure favorable report upon it. W. L. C.

The Hartford Water Motor Pump.

To meet the demand for a pump to be operated in places where steam is not available the L. E. Rhodes Company of Hartford, Conn., have put upon the market an improved machine to be operated by water power. While such a pump finds its chief use in localities where the city water pressure is weak and some device is necessary to force the water at a satisfactory pressure to the tops of high buildings, it is also being used for the general pumping of liquids against pressure where for some reason a steam pump cannot be used. In some parts of the country the city water is too hard for certain household purposes, and such a pump as we illustrate can be used to distribute cistern water through the pipes, using the city water supply for the power. The manufacturers use in their water motor pumps a simple and reliable form of motor, and the forcing pump which is combined with the



THE HARTFORD WATER MOTOR PUMP.

motor is constructed after the manner of a high grade steam pump. These motor pumps, it is said, will run continuously under constant strain without skilled attention, or, in fact, care of any kind. Both motor valves and pump valves are inclosed in the central valve case, through which the common piston rod passes, with an intermediate chamber from which any drip from one cylinder to the other is drained off. This construction brings the working parts closely together and leaves no mechanism at the ends of the machine, besides making it impossible for any mixing from one cylinder to the other. A hydraulic motor pump or "water lift" must be economical in the use of water, producing an even flow noiselessly and without waste; but it must above all be reliable. The very simple and well tried valve mechanism, proved in both the case of the motor and the pump to be sure and trustworthy, together with the rigid and accurate construction, make this pump, the manufacturers claim, beyond all else reliable. The production of a noiseless church organ motor has been the specialty of these manufacturers, and their experience in this line has been well applied to this pump, while another feature is their system of interchangeable cylinders. Either the motor or the pump cylinder can be changed without disconnecting any of the pipes, whereby the relative size of the two cylinders can be so varied that the most economical work can be obtained even in localities where the water pressure varies from year to year. It may be so arranged that the pump discharges at a

higher pressure than the water supply or the discharge may be greater in volume but lower in pressure than the water which supplies the power.

The Keegan Charges.

WASHINGTON, February 18, 1899.—The official denial of the charges made against the Maxim-Nordenfeldt Company and the Cramps, by J. J. Keegan, representing the International Mechanics' Union, has been received by Senator Kyle. It is a memorandum prepared by the Bureau of Naval Ordnance, and is as follows:

"On February 5, 1897, the Navy Department entered into a contract with the Maxim-Nordenfeldt Guns & Ammunition Company, Limited, for the manufacture of 100 heavy 1-pounder guns, mounts, accessories and spare parts, on the following terms—viz.: $2000 for each gun with accessories and spare parts, and $375 for each mount. As these guns, &c., were to be used on new vessels and paid for out of the appropriation 'Increase of the Navy, Armor and Armament,' it was obligatory that they should be made in the United States. On April 14, 1897, the Bureau of Ordnance entered into an agreement with the Maxim-Nordenfeldt Guns & Ammunition Company, Limited, which was approved by the Secretary of the Navy, whereby the guns, mounts, &c., should be manufactured by the Navy Department, under the following conditions: The Maxim-Nordenfeldt Company were to furnish all materials used in the manufacture of the guns, mounts, &c., also all gauges, patterns and special tools and fixtures necessary, the net cost and labor expended in the manufacture of the guns, mounts, &c., plus 100 per cent., to cover the cost of the following items—viz., the use of the plant of the Navy Department, the general shop and administration expenses, and the total thus obtained was to be extracted from the amount to be paid the Maxim-Nordenfeldt Company, under their contract of February 5, 1897 (viz., $2375 for each gun, mount, &c., complete).

"It will be seen that by this arrangement all the material was to be supplied by the Maxim-Nordenfeldt Company, all the cost of lagor, plus 100 per cent., was to be charged against the company, and all the company were to receive was the difference between this sum and $2375 for each gun, mount, &c., and should the aggregate exceed $2375 they would receive nothing. The contract not being completed, it is impossible to make any accurate statement as to final cost; but a careful review of the expenditures thus far made in connection with the work accomplished indicates that the Maxim Company will receive about $250 per gun, &c. Had the Government simply made these guns and paid a royalty for so doing, it would have had to pay $500 per gun, &c., in addition to the cost of manufacture; therefore, as it is, the Maxim-Nordenfeldt Guns & Ammunition Company, Limited, will receive less than the royalty. The real cost to the Government, as far as can at present be ascertained, will be $1637 per gun, mount, &c., to which, if there be added $250, the probable sum to be paid to the Maxim-Nordenfeldt Company, the sum total will amount to $1887 per gun, mount, &c., or about $488 less per gun, mount, &c., than the contract price, the latter sum being saved by the present arrangement as to manufacture. The price agreed on in the contract, $2375 for each gun, mount, &c., is about the present market price of similar guns, though no guns exactly corresponding to these have ever been made. Guns considerably lighter and less expensive to manufacture are sold for $2185 each, so that $2375 for the heavier guns is a fair commercial price. Had the Government bought the 100 1-pounder guns outright, it would have been obliged to pay $2375 each for them, whereas, under its arrangement, it will pay a considerably less sum than this, as previously stated. At one stage of the proceedings the American Ordnance Company requested that they might be allowed to make a portion of the 100 guns, under the same conditions as the Department is now making them, and the Department consented to allow them to make 40, but they afterward decided that it was not worth their while to undertake the work, and asked to be released from the obligation, and the request was granted. The present arrangement was considered, and is, advantageous to the Government, and was agreed to by the Maxim-Nordenfeldt Guns & Ammunition Company very largely in the hope that it would be the means of introducing their automatic guns generally into the United States Navy.

"Following are the facts concerning the contract of Cramp & Sons for the construction of the 8-inch turret mounts of the 'Indiana':

"November 6, 1894, a proposal was received from Charles H. Cramp to construct the 8-inch mounts for the 'Indiana,' excluding sighting gear and ammunition hoists, and install the mounts, including sighting gear and ammunition hoists, for $7500 each, all material being furnished by the Government f.o.b. their works. This proposal was accompanied by a draft of a letter stating that the offer was made simply to hasten the completion of the 'Indiana.' As the cost of similar work at the Washington Navy Yard was estimated to be $2104, Mr. Cramp's offer was returned to the Department 16th with an indorsement stating that fact. November 17, 1894, the Department addressed a letter to Cramp & Sons declining their offer. December 7, 1894, the Department referred to bureau a second offer from Cramp & Sons to build these 8-inch mounts 'at such price as the Bureau of Ordnance may estimate the work to be worth.' This proposal was returned to the Department with an estimated value of the work ($2104 each) and recommending its acceptance 'only at the earnest solicitation of the company, not believing that it will hasten the completion of the mounts.' Requistion No. 97 was then made, covering this work at a total cost of $16,832 for eight months. April 22, 1895, Cramp & Sons requested the cancellation of their contract for this work, and on April 30, at the request of the Department, stating in full their reasons for so requesting, which request the bureau returned to the Department May 7, 1895, recommending that the contract be canceled as the work would thereby be expedited. The reasons given by the Cramps for wishing to have their contract canceled are as follows:

"That our sole object in proposing to machine these mounts was to expedite the completion of the vessel. Several months were spent in negotiation. Our original proposition to build them was made on October 24, 1894, and the order was not placed with us until March 20, 1895. Thus a period of nearly five months elapsed, which, of course, was so much time deducted from the result we desired to accomplish, &c.

"Cancellation of above contract was then made, as will appear by copy of letter dated May 8, 1895, from the Bureau of Supplies and Accounts, by direction of the Department. The specifications accompanying the requisition provide that 'The Department agrees to pay the Cramps upon the completion of the contract the sum of $16,832.00.' As the contract was never completed, no payment of any sum was made to the company."

W. L. C.

THE WEEK.

State Senator Charles Smith of Lake Linden, Mich., who is prominently connected with the Calumet & Hecla Company, has introduced a bill in the Michigan Legislature amending the corporation laws of that State, so as to make it possible for mining companies to organize with a capital of anywhere between $10,000 and $5,000,000. The present law provides no minimum capitalization, but fixes the maximum at $2,500,000.

The speed record for cruisers was won last week by the Japanese cruiser "Chitose," built at the Union Iron Works, San Francisco, Cal. At her official trial outside San Francisco harbor, the "Chitose," in a run of 2 hours and 45 minutes, averaged 22.87 knots an hour, the highest speed attained being 23.76 knots. The "Chitose" is a protected cruiser of 4760 tons, 402 feet 2 inches in length, and drawing 17½ feet of water. She is provided with triple expansion engines of the latest pattern, which are capable of developing 15,500 horse-power. Her armament will consist of two 8-inch and ten 4-inch rapid fire guns, 12 12-pounders, six 2½-pounders and five torpedo tubes.

The thirty-sixth International Machinery Fair of Breslau, Germany, will be held in that city on June 15 to 17 next. It is announced that information relative to this exposition may be obtained from the "Maschinen-Ausstellungs und Markt-Commission, Matthias platz 6, Breslau," while applications for space should be directed to Dr. Kutzleb, Councillor of Agriculture, who is general secretary of the exposition, and all should be received by him not later than March 31.

The Navy Department is highly gratified with the reports received regarding the performances of the composite gunboats of the "Princeton" type, which were built on designs originating with Chief Constructor Hichborn. Those that have come from the "Marietta" and the "Annapolis" have been most satisfactory, and last week a dispatch sent from Gibraltar by the commander of the "Princeton," now on her way to Manila via the Suez Canal, spoke in glowing terms of the sea going qualities of that vessel under unusually severe weather conditions.

A bill just passed by Congress authorizes the Muscle Shoals Power Company to build and operate a canal at Sheffield, Ala., at an estimated cost of $1,000,000. It is the purpose of the promoters to construct a power canal on the side of the Tennessee River, opposite the Government Canal. From this canal it is proposed to generate power for furnishing electric lighting for Sheffield and other nearby Alabama towns, and also power for manufacturers.

The Plan of the Paris Exposition.

[*With Supplement.*]

We are indebted to the United States Commission to the Paris Exposition of 1900 for the data upon which the accompanying plan of that great enterprise is based. To those who were visitors to the exposition of 1889 much of the plan represents familiar ground, but there have been many and important modifications which it may be of interest to refer to in some detail.

What promises to be in 1900 the most brilliant and artistically superb feature will be the main approach, flanked by the two palaces of fine arts in the Avenue des Champs Elysées. A beautiful new bridge, that of Alexander III, has been thrown across the Seine to connect with the Esplanade des Invalides, flanked by a series of exposition structures, with the Hotel des Invalides in the background. Stretching along on both banks of the Seine are a series of structures until the Champ de Mars on the one side and the Trocadero group on the other are reached.

The general arrangement of the structures on the Champ de Mars has been retained, the Eiffel Tower occupying one end. What was in 1889 the wide machinery hall has been divided into three parts, the center being a festival hall, flanked by room for exhibits. The two wings have been considerably extended, including on one side the space occupied by the old art gallery and the other that taken by a series of other structures.

To our manufacturers the most interesting feature of the plan which we publish is that showing the location of the spaces allotted to the United States. These are indicated by heavy black. We tabulate these as follows:

Groups.	Classes	Buildings.	
I	1 to 6	Main (right wing).	Education and instruction
II	7 to 10	Main (right wing).	Works of art.
III	11 to 18		Letters, sciences and arts (instruments).
IV	19 to 22	Main building.	Mechanical apparatus and appliances.
V	23 to 27	Main building.	Electricity.
VI	28 to 34		Civil engineering and transportation.
VII	35 to 42	Main B.	Agriculture.
VIII	43 to 48	Right bank.	Horticulture and arboriculture.
IX	49 to 54	Forestry B.	Forestry, hunting and fishing.
X	55 to 61	Main B.	Alimentation.
XI	62 to 64	Main B. (left wing).	Mines and metallurgy
XII	65 to 74	Invalides.	Decoration and furniture of public buildings and habitations.
XIII	75 to 85	Main B. (left wing).	Threads, cloth, garments.
XIV	86 to 90	Main (right wing).	Chemical industries.
XV	91 to 99	Invalides.	Various industries
XVI	100 to 111	Right bank	Social economy, hygiene, public charities.
XVII	112 to 114		Colonization.
XVIII	115 to 120		Military and naval.

The left wing of the main building, on the Champ de Mars, at the lower end, is the space allotted to Mines and Mining, Group XI. This includes the metallurgical exhibits, and will embrace iron and steel, while, as we understand it, the department of hardware and similar products will occupy a gallery above this space.

Groups IV and V, which include mechanical apparatus and appliances and machinery, are located as indicated in the connecting aisle, close to what was formerly the machinery hall.

It will be observed that the United States pavilion is on the left bank of the Seine, in the general group of the palaces of foreign powers, and that the Paris office of the United States Commission is well located in proximity to the exposition, on the Avenue Rapp.

Canadian News.

Abbott-Mitchell Iron & Steel Company.

Frank A. Mitchell of Norwich, Conn., William Abbott of Montreal, and others associated with them in the agreement entered into with the city of Belleville to establish iron works there, have been duly incorporated under the laws of this province as the Abbott-Mitchell Iron & Steel Company of Ontario, Limited. Their charter is one of the broadest ever granted by the Ontario Government. The capital stock is to be $150,000 in shares of $100 each. Power is given to the company to manufacture pig iron and muck bars, bar iron, Bessemer and other descriptions of steel, iron and steel rails, &c. Mining rights and manufacturing rights of the fullest scope are given. The provisional directors are Frank A. Mitchell, John Mitchell, Chas. Bard, all of Norwich, Conn.; Wm. Abbott, Montreal; Henry Pringle and S. S. Lozier, Belleville. At the outset the company will confine their work to the rolling of iron, the manufacture of nails and bar iron. Whether they will use puddled bar, as some of the rolling mills in Canada have begun to do to some extent, or will use wrought scrap iron, which is still the main material of the bar iron produced here, remains to be seen. In time it is expected the company will make use of some of their additional powers, launching out possibly into the smelting business, for which the ore lands of Hastings County are convenient.

Midland as an Iron Center.

Negotiations for establishing a charcoal iron furnace of large capacity at Midland, Ont., have advanced rapidly since last writing. At a public meeting in the town the terms proposed were discussed by the citizens, and a resolution was passed approving the idea of granting a municipal bonus of $50,000 to the Canada Iron Furnace Company. Exemption for 10 years from all taxation except a limited assessment for school purposes was also agreeable to a majority of the persons in attendance. A few days afterward the agreement was signed by the representatives of the town and of the Canada Iron Furnace Company.

The Canada Iron Furnace Company, Limited, of Montreal, and Radnor Forges, Quebec, are celebrated for the excellent charcoal iron they turn out from the bog ores of their locality. They propose to increase their operations by erecting another furnace, this one to be in Georgian Bay, the particular point on that bay which now appears to be finally selected being Midland. This town has probably the best harbor on the bay. To Midland ore supplies can be brought in at a low cost, either by rail from the Hastings mines or by water from the mines on Lake Superior or the north shore of Lake Huron. It is understood that American ore from the Lake Superior district may be drawn upon at the outset. Lake Superior charcoal iron is now largely mixed with the Radnor Forges charcoal iron in the manufacture of car wheels, and it is assumed to be the desire of the company to produce the required complement to their Radnor iron at the new furnace. But apparently the main and ultimate source of ore now in view is the north shore of the lakes. Abundance of fine ore there undoubtedly is at various points along the north channel as well as throughout the Rainy River district. Near Bruce Mines on Lake Huron good hematite iron ore has been exposed. A deposit was opened there in 1898. The ore has always been spoken of as high in quality, running 58 per cent. in iron. The ore body lies alongside deep water on Lake Huron. Some development work was done in 1897 near Desharats Station on the Canadian Pacific Railway, to the north of this spot, but the ore was found to be of low grade at the surface, and operations were suspended until tests should be made by the diamond drill. It is from these sources that the Midland furnace would probably draw supplies. In Quebec the Canada Iron Furnace Company get the benefit of the Dominion bounty on their product. Operating in Ontario, they would naturally seek to get the full advantage of that bounty by using exclusively Canadian ore if possible, and to get also the benefit of the Ontario bounty allowed on all iron that is the product of ore raised in the province. As to fuel, it is understood the company have received satisfactory assurances from the Ontario Government that they may utilize on reasonable terms the waste timber on Crown lands from which the pine has been stripped. As to the market, the Canadian Iron Furnace Company will have the advantage of being able to consume a very large part of the output of the Midland furnace, to be used in mixture with Radnor iron in the manufacture of car wheels, in works controlled by those most deeply interested in the Canada Iron Furnace Company—namely, the Montreal Car Wheel Company, the St. Thomas Car Wheel Company and the Hamilton Wheel & Foundry Company. The furnace is to produce a guaranteed output of 60 tons per day, to be carried on at least 300 days in the year, and to give employment in smelting and tributary work to 200 men.

Niagara Power Franchise.

In the Legislature here on the 15th inst., Premier Hardy answered a series of questions in which great public interest is taken, the subject being Niagara power development, and the interrogator being Mr. German, representing Welland. There were 11 questions in all. The information they were intended to elicit was whether or not the Government would terminate the lease and rights of the Canadian Niagara Power Company if by November 1 next that company were not level with their agreement. By that date they must be able to show that the whole previous 12 months had not passed without their producing electric power as specified in the agreement. It is apprehended that, starting from the

beginning, as the company practically have still to do, they cannot possibly reach the development called for in the short limit of time left. To have completed water connections for the production of 25,000 horse-power and to have ready for use, supply and transmission 10,000 horse-power, they must do an enormous amount of construction work. Premier Hardy's several circumstantial answers to the several questions intended to exhaust the facts need not be enumerated, but his reply to the material question is of importance. It is to this effect: That if the company should, after the warnings they have received, spend before November $500,000 or $1,000,000 and thus bring their work near to completion, the Government would then take such action as it should deem best in the public interest. "Further," added Mr. Hardy, "it is the intention of the Government, in case of default upon the part of the company, in any case to do all acts and take all proceedings necessary to declare the right of the company to the sole use of the waters of the Niagara River within the limits of the park at an end, under section 9 of the agreement, as soon as the law will allow." That is, no matter what allowance may be made, if the company fall short of their required performance by November, even though they expend $1,000,000 and have their works near completion, their monopoly will cease after that date. Whatever rights may be allowed to the company after that, if they default by never so little they must suffer a considerable abridgment of their monopoly rights.

Trade Items.

A contract for water wheels to run the electrical machines to open the lock gates of the Soulanges Canal has been awarded by the Ottawa Government to the Stilwell-Bierce Company, Dayton, Ohio. The amount is $30,000. The Chandière Machine & Foundry Company, Ottawa, have protested against the work being let without tender.

Eugene Munsall & Co., New York, have leased a factory building in Ottawa where Canadian mica is to be prepared and shipped to their New York house. They were very heavy buyers of Ottawa mica last year.

La Compagnie de Ferronniers du Canada (the Canada Hardware Company) have been incorporated under letters patent granted by the Quebec Government to carry on a hardware and metal business in Montreal, with a capital stock of $50,000. The persons incorporated are Israel L. Lafleur, hardware merchant, Montreal; Joseph A. St. Armand, F. X. Panneton and Hyacinthe Beauchemin.

The iron bridges required for the Midland Railway of Nova Scotia are to be supplied by the Dominion Bridge Company, Montreal. The contract will amount to several hundred thousand dollars. C. A. C. J.

A Scrap Iron Trust.

It having been reported that several operators in scrap material from various points in the Central West have recently been holding secret meetings at one of the Chicago hotels, for the purpose of forming a combination, we have requested a gentleman in a position to gain some information on the subject to investigate the matter, and herewith present his report:

The worm has turned, and the scrap iron dealer, oppressed on one side by the railroad purchasing agent, who insists upon selling to the highest bidder, and on the other side by the consumer, who insists on buying on certain arbitrary terms, is rising to be a great power in the land and join the recent army of trusts, and before long will send to New Jersey to incorporate, possibly under the name of the American Junk Company.

Heretofore it has been the ambition of the scrap dealer to become a rolling mill owner. It looked so enticing that after submitting so long to the alleged injustices of the rolling mill men he might become one himself and do likewise to other scrap iron men who heretofore were his colleagues. However, all scrap dealers who went into the rolling mill business have failed with the exception of a select few, who, however, have not been in the business very long. An incident drew the attention of the scrap dealers from the glittering prospects of being rolling mill owners to the more promising trust promoting field.

It has recently happened that gentlemen of recognized ability rather conspicuously failed in conducting manufacturing enterprises and afterward turned their attention to the business of promoting. In this line they achieved remarkable success, receiving in appreciation of their services great blocks of stock in the newly formed companies which placed them in the ranks of millionaires.

This delightful episode seeming to reaffirm the universally expressed but paradoxical opinion that "an unsuccessful business or financial manager makes an excellent trust promoter," some ambitious parties identified with the scrap trade discovered in themselves the exact qualities essential to successful trust promoting and the present forming of a combination of the various rolling mills in the Central West being another incentive, they have come together to "promote."

It is a sublime conception—this scrap iron trust, with a capital of so many millions of dollars. It would possibly also be ridiculous to imagine a scrap iron peddler going through the streets gathering up old iron and stoves, as being the advance agent of a trust, were it not for the pathetic side, which would expose this same advance agent to untold dangers. The anarchistically inclined housewife, incensed after dealing with the "cereal trust" and the "ice trust," may feel called upon to welcome the aforesaid agent of the scrap iron trust with a shower of well directed empty bottles belonging to the "milk trust."

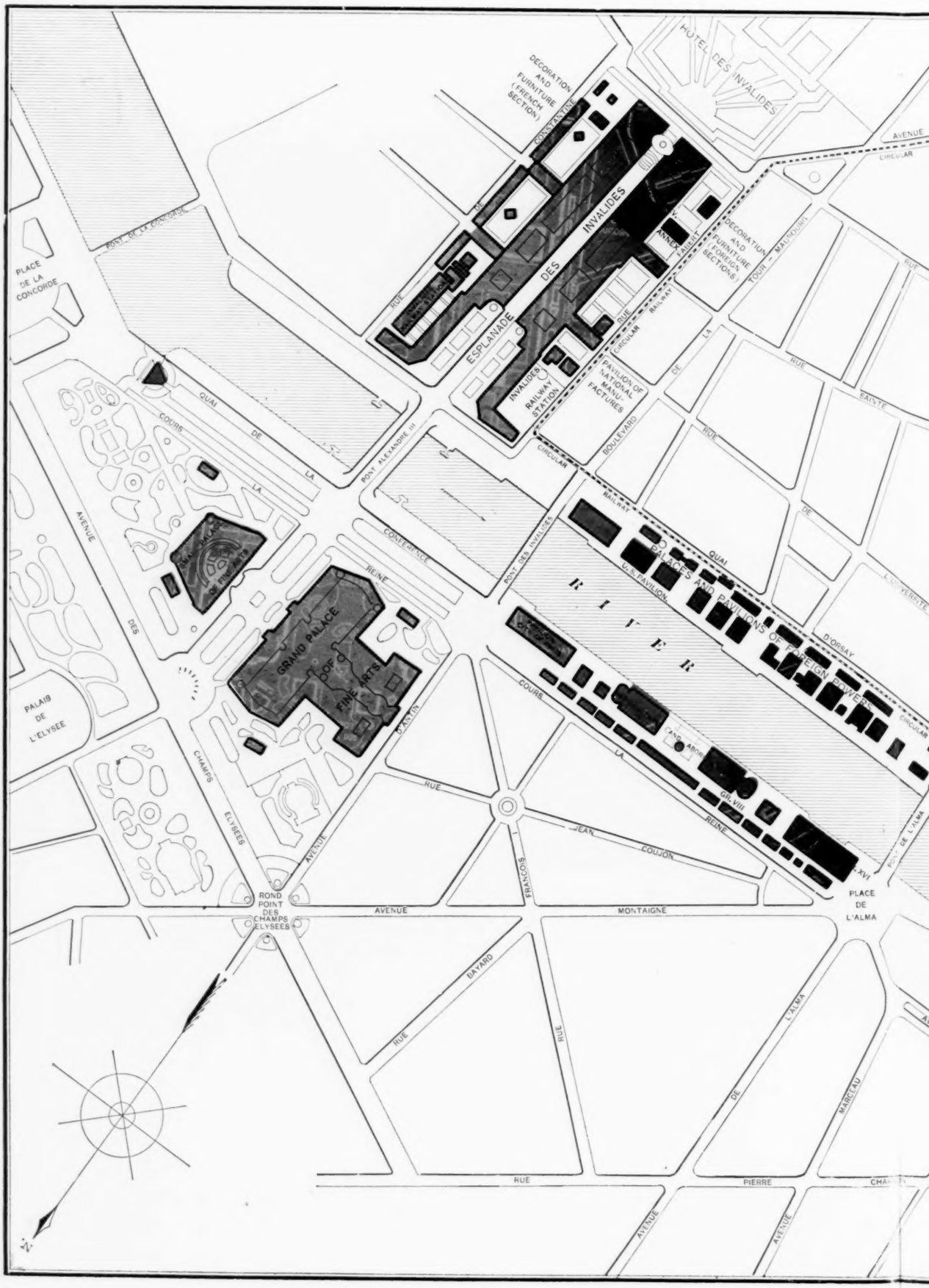
The only hitch in the forming of this trust is the matter of capitalization. If the capital is not put at a high figure there will not be a large enough shower of free common stock to gladden the heart of the promoter. But if the capitalization is high enough for that laudable purpose the rolling mill combination might hesitate in handing over its entire purchasing business, and consequently supplying the entire profits of a concern capitalized on a basis of so and so many hundred thousand dollars of annual dividends. Thus it will be seen that the promoter also has his troubles. But what a millennium will it be for the scrap merchant should this trust become a thing of reality! No more sealed bids; all will be treated alike—the manufacturer and the railroad purchasing agent (particularly the latter), the pleasant and the affable purchasing agent, the dude purchasing agent, who is so proud that he will not recognize any one on the street, the cranky old purchasing agent of the railroad about to be sold, and the purchasing agent who drives a close bargain; they all will be obliged to form in line and wait upon the local agent of this scrap iron trust and humbly accept what he will choose to give them for their accumulations. Even the new war revenue tax law will feel the effects. No more sight drafts, but the powerful scrap trust will lay down its own terms of payment, and nothing will be left for the railroad company but to submit, unless they want to utilize their scrap accumulations in filling out their road beds.

No wonder that the evolving of this brilliant idea has angered parties who were not bright enough to originate it themselves. One of these low minded jealous persons has been mean enough to send the following letter to various rolling rolling mill managers:

"A few scrap dealers located at various distributing points are attempting to form some sort of combination, ostensibly for the benefit of the mill owners, but in reality for the purpose of hoodwinking the consumers. The exact *modus operandi* of the proposed scheme has not been determined upon, presumably because all of the dealers asked have not yet consented to join, and because it has not been determined so far which fairy tale would be the most likely to work upon the credulity of the mills to induce them to co-operate; but the general outline is to have the few parties interested purchase all the scrap material required by these consumers and deliver it to them, it being held out that by these means competition in buying from railroads, manufacturing concerns and dealers will be eliminated, and mills will thus succeed in securing their supplies at an unprecedented low figure. I do not wish to offer you the insult to consider you capable of believing for one moment that such a ridiculous Utopian scheme could be successful for any length of time, but upon consultation with my sensible competitors who are not in sympathy with this lunacy, we have determined each to write to such of our customers whose confidence we believe we are enjoying, in order to acquaint them with this scheme, so they at least have knowledge of it if the projectors of it do not find their way clear to approach the mills with it. None of the conditions which justify a combination of producers of a commodity apply to scrap material. It does not cost anything to produce, but is a waste article, which continually accumulates at 1000 various points. It will always find its level of market values due to the laws of supply and demand, which in this case cannot be artificially influenced. A combination for a uniform price to all consumers cannot be maintained, by reason of the inequality of freight rates between the various points of production and consumption, the difference in quality between material going by the same name as accumulated by various producers, and the difference in desirability of dealing with the various consumers themselves, as regards their financial standing, their way of dealing with shippers and their terms of payment. If such a scheme as outlined above would work successfully the dealers who are not parties to it, and who in Chicago alone handle 90 per cent of the scrap material tributary to this market, would very quickly either lease some of the many vacant rolling mill plants or build new ones, and thus create a new and undesirable competition, which would work more permanent damage to the mills interested than can be offset by any visionary profits shown by the promoters of the scheme in question. If competition in bidding on railroad scrap would be eliminated, every large railway system will consider the advisability of building a plant for turning their accumulation into new material."

Of course the sentiments expressed in this letter are all rot and nonsense, and the rolling mills will see through them at once and will recognize that their salvation lies in tying themselves up to the "scrap iron trust."

The United States Mitis Company have brought suit for royalty and injunction against the Indiana Steel Casting Company, Montpelier, Ind.



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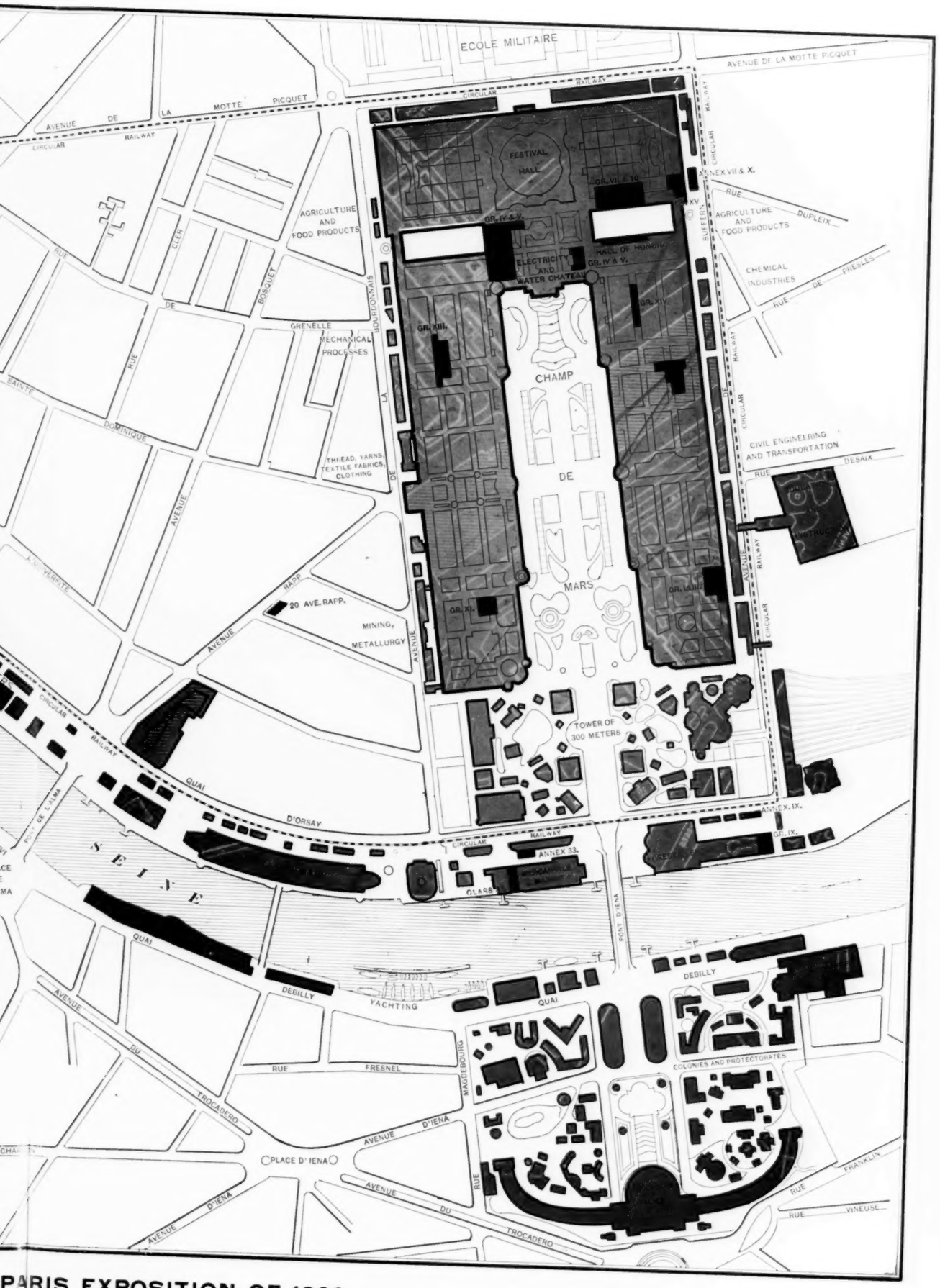

PARIS EXPOSITION OF 1900.

The Iron Age.

New York, Thursday, February 23, 1899.

DAVID WILLIAMS COMPANY, - - - - - - - PUBLISHERS.
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RICHARD R. WILLIAMS, - - - - - - - - HARDWARE EDITOR.
JOHN S. KING, - - - - - - - - - BUSINESS MANAGER.

Failure of Shipping Bounties in France.

In view of the interest which is now being taken in the development of American shipping, it is worth while to consider a recent report by a Parliamentary committee appointed in France to study and recommend methods of encouraging the merchant marine of that country. After having been in session for more than 18 months the committee is of the opinion that the present condition of the French mercantile marine is a critical one, and that its continued failure to compete successfully with other countries, especially in the case of steamships, "would lead to the most disastrous commercial, social, military and political results." The position of France as a world power has been too great to be surrendered lightly. Apart from her importance as an industrial and commercial country, France is an ally of Russia in international complications of great possible moment, a contestant with Great Britain for an immense slice of Africa, and the mother of colonies on every continent. Such a country naturally would wish at least to maintain her relative standing as a maritime power. Hence the report of a Governmental commission, based on an investigation lasting for a year and a half, might be expected to contain suggestions of a wider interest than for France alone. About all that it does contain, however, is a proposition to amend certain sections of an existing law, to provide for an increase in the rate of bounties now paid (1) for ship construction and (2) for navigation.

During 16 years the French Government has paid bounties for navigation (mileage) amounting to $24,425,000, and bounties for shipbuilding amounting to $8,440,000, or a total of $32,865,000. This is in addition to the postal subsidies paid by France to steamship companies, which amounted in a recent year, according to the International Bureau of the Universal Postal Union, to $4,965,085. It would seem that such an expenditure should bring returns in the shape of an enlarged shipping trade, even if only a forced growth. The position of France in this regard, however, is indicated by a recent report of the Marseilles Chamber of Commerce. A table is given of the amount of shipping tonnage entered in 43 principal ports of the world in 1887 and in 1895, the increase on the whole being 28 per cent. But the ports of France did not share in this increase. Marseilles, Bordeaux and Cette showed a falling off in the extent of shipping during this period, which was not compensated for by the slight increase at Havre and Rouen. These French ports showed, on the whole, a decline of 4 per cent. This would indicate that the expenditure of money for subsidies will not alone build up a great shipping trade, nor maintain the relative importance of such a trade, where it already exists, against active competition.

The coincidence of the rapid growth of Great Britain's merchant marine and the payment of liberal mail subsidies by that country for many years has been mistaken sometimes for a case of cause and effect, capable of being repeated in any country which cared to make a similar expenditure. While the liberal subsidies which in times past have been paid by Great Britain may have stimulated commercial progress more or less, such payments alone could not have been the cause of her present high rank as a maritime power. The expenditures in behalf of the Cunard line, counting from 1840, have been very great, rendering its founder wealthy, but long before his compensation was changed from a "subsidy" to "mail pay" rival lines had grown up, without a penny from the public funds, and have become strong enough to demand a share of the mail contracts on the ground that they could give a service equal to that of the subsidized line. Who knows but that if England had never paid a single subsidy to a shipping company steam navigation would have been developed just as soon?

When steamships had to be built it was inevitable that the work should go, in the beginning, to England, as the country then best equipped for it, just as the United States had led previously in the construction of wooden ships, because of our possession of the best supplies of ship timber. The payment of subsidies was tried here on a considerable scale 45 years ago, and at one time it appeared as if our support of the Collins line had been the means of inducing the British Government so support Cunard more liberally. But although Collins received from Washington probably more than the cost of his ships, his line eventually disappeared from the seas. In the meantime British shipping has continued to grow, outside of the subsidized lines, until a comparatively insignificant proportion of the whole is now aided by the Government, while all the other countries of Europe have expended money liberally as a means of encouraging shipbuilding. Still shipbuilding in England shows no decline. The output from her shipyards increased from 1,000,000 tons in 1881 to 1,610,000 tons in 1898, and while it may be urged that the output for the past year was abnormal, owing to the previous interruption in the industry due to the engineering strikes, the British builders have full work for many months ahead, and some of them doubt whether the highest point in production has yet been reached.

Great Britain must eventually lose her pre eminence in shipbuilding, however, from the fact of her no longer having such advantages with regard to skilled labor or cheap materials as she once enjoyed. But it is not necessary for the volume of her production of ships to fall off for her relative importance in this line to become less, owing to the world's growing demand for ships, which other countries will help to meet. Besides the advantages which British shipbuilders have possessed hitherto with regard to materials and labor, their industry has profited from the enormous amount of work placed in private hands in the development of their country's navy. Then the world is dotted with coaling stations, planned no less for the benefit of British commerce than of the British Navy, besides which the protection afforded by such a navy as that is has been a great incentive to the enlargement of the merchant marine. Like advantages and like incentives will lend encouragement to the building of ships in other countries, but the country which depends alone upon Governmental aid in the shape of shipping subsidies is likely to find itself in the end a companion in misery of France. That country is not favorably situated as to the production of materials in which we have become pre-eminent. All that American shipbuilders and shippers need ask

is that they be placed on an equality with their foreign rivals. Then the outcome may be looked forward to with confidence. That our next line of great development will be in the direction of a merchant marine no one doubts. The burning question is whether we need and shall obtain an impetus.

Chicago Pays Riot Damages.

The liability of cities and counties for the value of property destroyed in riots has been pretty thoroughly established in several States. The Supreme Court of Illinois has just passed upon a question of this kind originating in the railroad riots in Chicago in July, 1894. The lower court had found for the claimant under a State law making cities and counties liable for three-fourths of the value of the property destroyed. The constitutionality of the law was attacked in the appeal taken by the city, but the decision of the lower court was affirmed. Laws of this kind should be enacted in every State, as the financial consideration involved in the payment of damages will powerfully operate in stiffening the backbones of mayors and sheriffs in dealing with mobs. All property owners and taxpayers will be more likely to uphold the authorities who are endeavoring to maintain law and order than to sympathize with any movement which may precipitate a riot and cause great damage and destruction.

Limitations of Frontier Manufacturers.

The experience of adventurous business men who have sought to establish manufacturing industries in agricultural sections of the West has taught at least one important lesson. It had been supposed that in the manufacture of staple articles many advantages were to be gained by locating in the immediate vicinity of an important consuming population. Factories were therefore established which depended on the producing sections further East for their material and worked it up into finished product for the presumedly unlimited local market. Conditions that in many cases were apparently quite promising proved to have the serious drawback that a satisfactory market was only to be found to the West. Shipments East, even to what might be considered only a reasonable distance, met with such competition from Eastern establishments of the same character that sales thus made were either at no profit or at a loss. Such works have not even had a zone surrounding them in which they were free to operate, but could reach out practically in but one direction. This is something which others who contemplate ventures of a similar character would do well to consider. Inducements may be offered of free building sites and even of a cash bonus which may seem quite inviting, but they are offset by the disadvantage of the limited market.

Another serious matter, which is not made evident until manufacturers are brought into direct contact with the hard fact, is the disposition of the railroad companies running Westward from Eastern works to give specially low rates to such works in reaching Western markets. Corresponding advantages are not given to the Western concerns, because their business is not so attractive, and may probably never attain such favorable conditions as to amount to enough for railroad companies to take a perfectly impartial view of the situation. Those who are considering the apparent advantages to be offered by the location of manufacturing concerns near Western supplies of raw material should examine carefully into these influences governing the distribution of the products, and they will undoubtedly see that the tendency toward greater development in the Central West and the relinquishment of manufacturing operations toward the frontier of the manufacturing States are due to perfectly legitimate causes and not to the arbitrary dictation of capital. The continued progress of manufacturing industries Westward until almost every little center of population should have important industries has been the dream of many writers, and even statesmen, but the dream is not being realized, as the movement is not developing with the speed expected. The tremendous reductions in the cost of transportation have to a great extent eliminated the question of distance from the points of greatest production. The inducement to plant manufacturing enterprises further West in order to be close to a purely consuming section is therefore steadily growing less.

OBITUARY.

JOHN MACBETH.

John Macbeth, a well-known foundryman of Cleveland, Ohio, died in that city on February 4, aged 70. Mr. Macbeth was born in Edinburgh, Scotland, came to this country when a child and had been in the foundry business since 1852. He established in 1869 the Macbeth Foundry Company in Cleveland. Their product is mainly architectural iron. He retired from business seven years ago.

FRED. L. GEIST.

The death is announced of Fred L. Geist, first vice-president and treasurer of the Shiffler Bridge Company of Pittsburgh, Pa., which occurred at Redlands, Cal., on February 6. He had gone to California early in the winter seeking relief from a pulmonary trouble which had afflicted him for some time past. Mr. Geist, who was only 38 years of age, had a large circle of close friends in the business circles of Pittsburgh.

ALEXANDER P. STERLING.

The death occurred on February 9 at Canajoharie, N. Y., of Alexander Pliny Sterling, a well-known iron manufacturer of Northern New York.

LEWIS T. HASKELL.

Lewis T. Haskell, one of the founders of the bolt and screw manufacturing firm of Pinkham, Haskell & Co. of Pawtucket, R. I., died on February 12 at his home in that city, at the age of 74 years. He was a native of Cumberland, R. I., and was for several years engaged in the stove and tinware business, from which he retired in 1888. The business of Pinkham, Haskell & Co. is carried on by William H. Haskell, brother of the deceased.

JAMES F. KLINE.

James F. Kline of Orefield, Lehigh County, Pa., one of the most prominent business men of that district, died on February 10 at Trexlertown, Pa., aged 71 years. Mr. Kline was for long extensively engaged in the development of iron ore mines on his property at Orefield. He filled many public positions of trust and honor, including several terms in the Pennsylvania State Legislature as a member from Lehigh County.

EDWARD S. HAYDEN.

Edward Simeon Hayden, a well-known metallurgist and the inventor of the Hayden process for separating precious metals from copper, died on February 14 at his home, 115 East Thirty-seventh street, New York, after several months' illness. Mr. Hayden was in the forty-eighth year of his age. He was a descendant of the well-known Hayden family of Massachusetts. For several years he was secretary and assistant treasurer of Holmes, Booth & Hayden of Waterbury, Conn., of which his father was one of the original stockholders. He resigned from that company and afterward went to Bridgeport, Conn., where he invented and perfected his process of separating precious metals from copper. He perfected his process at the Bridgeport Copper Company, who are still using it under license. It is also the process used at the Baltimore Electrolytic Refining Works.

C. B. ISBESTER.

C. B. Isbester, vice-president of the Chattanooga Pipe & Foundry Company, died on February 17 at Chattanooga, Tenn., from Bright's disease, aged 70 years.

The Navy Appropriations.

WASHINGTON, February 21, 1899.—The House Committee on Naval Affairs on the 17th inst. reported to the House the annual Naval Appropriation bill, and at the close of to-day's session of the House about one-half the provisions of the measure had been disposed of without encountering any serious opposition and without incorporating any amendments. The bill appropriates a total of $44,168,605, divided as follows: General establishment, $13,236,440; Bureau of Navigation, $505,125; Bureau of Ordnance, $3,143,124; Bureau of Equipment, $2,416,455; Bureau of Yards and Docks, $4,997,728; Bureau of Medicine and Surgery, $192,500; Bureau of Supplies and Accounts, $3,220,432; Bureau of Construction and Repair, $3,273,407; Bureau of Steam Engineering, $1,207,900; Naval Academy, $217,120; Marine Corps, $1,366,791; Increase of Navy, $10,192,402.

Three New Battle Ships and Six Cruisers.

Naturally the provision for the increase of the navy has attracted chief attention, providing as it does for three new battle ships, three armored cruisers, and six smaller cruisers, practically as recommended by the Secretary of the Navy. The provisions of the bill, which will be examined with much interest by reason of the conditions prescribed therein with reference to the letting of contracts, price of armor, &c., are as follows:

"That for the purpose of further increasing the naval establishment of the United States the President is hereby authorized to have constructed by contract three seagoing coast line battle ships, carrying the heaviest armor and most powerful ordnance for vessels of their class upon a trial displacement of about 13,500 tons, to be sheathed and coppered, and to have the highest practicable speed and great radius of action, and to cost, exclusive of armor and armament, not exceeding $3,600,000 each; three armored cruisers of about 12,000 tons trial displacement, carrying the heaviest armor and the most powerful ordnance for vessels of their class, to be sheathed and coppered, and to have the highest practicable speed and great radius of action, and to cost, exclusive of armor and armament, not exceeding $4,000,000 each; and six protected cruisers of about 2500 tons trial displacement, to be sheathed and coppered, and to have the highest speed compatible with good cruising qualities, great radius of action, and to carry the most powerful ordnance suited to vessels of their class, and to cost, exclusive of armament, not exceeding $1,141,800 each; and not more than two of said battle ships, and not more than two of said armored cruisers, and not more than two of said protected cruisers, shall be built in one yard or by one contracting party, and the contracts for the construction of each of said vessels shall be awarded by the Secretary of the Navy to the lowest best responsible bidder, having in view the best results and most expeditious delivery; and in the construction of all said vessels all of the provisions of the Act of May 4, 1898, entitled 'An Act making appropriations for the naval establishment for the fiscal year ending June 30, 1899, and for other purposes,' shall be observed and followed, except that no proposals for any of these vessels shall be considered unless the bidder is already in possession of an adequate plant; and, subject to the provisions hereinafter made, one and not more than one of the aforesaid seagoing battle ships, and one and not more than one of the aforesaid armored cruisers, shall be built on or near the coast of the Pacific Ocean, or in the waters connecting therewith: Provided, That if it shall appear to the satisfaction of the President of the United States, from the biddings for such contracts when the same are opened and examined by him, said vessels, or either of them, cannot be constructed on or near the coast of the Pacific Ocean at a cost not exceeding 4 per centum above the lowest accepted bid for the other battle ships or cruisers provided for in this act, he shall authorize the construction of said vessels, or either of them, elsewhere in the United States, subject to the limitations as to cost hereinbefore provided.

PERSONAL.

D. A. Merriman, manager of the St. Louis office of the American Steel & Wire Company, has been elected president and treasurer of the Puget Sound Wire Nail & Steel Company, now owned by the American Company, and has gone to Everett, Wash., to take charge of the plant.

H. P. Crowell, vice-president of the Cleveland Foundry Company, Cleveland, Ohio, has been elected president of the American Cereal Company.

Samuel A. Sague, consulting and contracting engineer, has opened an office in Cleveland, Ohio. Mr. Sague was the originator and builder of the American Wire Company, Cleveland, Ohio, in 1882, now absorbed by the American Steel & Wire Company. He became connected with the iron and steel sheet and plate mill industry as general manager and vice-president of the Britton Iron & Steel Company of Cleveland, and invented many appliances in their galvanizing department, retaining an interest in the company until their absorption in the Cleveland Steel Company, after which he took the general sales agency for the American Wire Company, Cambridge Iron & Steel Company and the Ellwood Tin Plate Company, being among the first to introduce American tin plate to the trade in this country. He also built the works of and organized the U. S. Standard Drawn Steel Company. The process of annealing invented by Mr. Sague for this plant is one of the most successful now in use. When this company were absorbed by the Shelby combination he stayed some time with the combination to assist in the organization and taking charge of selling a portion of their production.

Willard S. Mattox, whose letters from England in *The Iron Age* have attracted wide attention, is now in this country. He is the European representative of Rogers, Brown & Co., pig iron merchants.

H. Gardner, the general manager of the firm of Henry R. Merton & Co., among the largest metal merchants in England, is now visiting this country.

New East River Bridge Bids for Towers and End Approaches.

Bids were received on the 18th inst. for the construction of the towers and end spans of the new East River Bridge between New York and Brooklyn. The bids were made in a lump sum for the entire work complete, which included the building of the intermediate towers (between the main towers and anchorages). The weights are shown in the following table:

Towers and End Spans.

Plates, Shapes, Castings, &c.

	Plates.	L's.	Beams, L's, pins and bolts.	Castings.	Totals.
End span:					
Cantilever span (one).	822,080	481,280	3,560	24,000	1,330,900
Connecting span (one)	369,340	259,750	.....	.....	629,090
Top lateral system....	35,250	61,650	.....	.....	96,900
Bottom lateral system	39,820	126,600	.....	.....	166,420
Overhead trusses, &c.	350,370	246,030	.....	.....	596,400
Floor beam hangers..	13,470	93,150	.....	.....	106,620
Floor system.....	938,400	1,043,800	363,200	.....	2,345,400
Total.....	2,568,730	2,302,240	366,760	24,000	5,261,730
Rivet heads.....					201,270
Total.....					5,463,000
Intermediate tower:					
Columns.....	120,910	45,950	200	.....	167,060
Long. bracing.....	36,680	41,900	.....	.....	78,580
Trans. bracing.....	46,260	54,240	.....	.....	100,500
Trans. bracing (center)	17,630	22,470	610	.....	40,710
9-foot girders.....	15,940	8,360	.....	.....	24,300
18-foot girders.....	78,150	20,070	.....	.....	98,220
Cov. plates.....	4,770	.....	.....	.....	4,770
Diaphragms	5,080	5,680	.....	.....	10,760
Bearings.....	10,010	.....	18,820	.....	28,830
Pins.....	.....	.....	1,290	.....	1,290
Column bases, &c.....	.....	.....	.....	79,900	79,900
Foundation.....	.....	.....	9,800	600	10,400
Total	335,430	198,670	30,720	80,500	645,320
Rivet heads.....					20,980
Total...					666,300
Main tower:					
Saddles, &c.....	95,560	.....	209,980	582,260	887,800
Girders at top.....	340,230	179,650	.....	.....	519,880
Trusses and girders...	172,000	83,430	70	1,380	257,480
Main columns.....	2,246,890	425,550	.....	.....	2,672,440
Bracing.....	761,500	756,000	.....	.....	1,517,500
Total.....	3,616,780	1,444,630	210,050	583,640	5,855,100
Rivet heads.....					241,000
Total					6,096,100
Totals (one side river).	6,520,940	3,945,540	607,530	688,140	11,762,150
Rivet heads...					463,250
Grand total.....					12,225,400

The bids received were as follows:

Pennsylvania Steel Company.....	$1,209,444
N. J. Steel & Iron Company.....	1,220,230
Benjamin Maurice & Co.....	1,230,000
Phœnix Bridge Company.....	1,315,000
Elmira Bridge Company	1,374,000
King Bridge Company.....	1,461,000

The contract has been awarded to the New Jersey Steel & Iron Company.

The Turner, Vaughn & Taylor Company of Cuyahoga Falls, Ohio, are giving increasing attention to one of their specialties, the building of wire mills of a wide range of capacity and with modern machinery.

The Old Meadow Rolling Mill Company.

The strike at the sheet mills of the Old Meadow Rolling Mill Company, Scottdale, Pa., which has been in progress for the past two months, has been settled by a change in the ownership of the plant. I. W. Frank of the Frank-Kneeland Foundry & Machine Company of Pittsburgh; Charles Dreifus of Dreifus, Block & Co., iron and steel brokers, of that city, and others have purchased the plant from the former stockholders and will put it into active operation before the end of the present month. The Old Meadow Rolling Mill Company were organized a year ago by the striking workmen of the Scottdale Iron & Steel Company, with the financial backing of a number of local capitalists, who provided the bulk of the capital of $125,000 and owned nearly three-fourths of the stock. The plant was substantially built and equipped with machinery and appliances of the most modern type, and began operations last July. It consists of six sheet furnaces, six pair furnaces, five annealing furnaces, one 26 x 54 inch mill, one 24 x 44 inch mill, with roughing rolls, and four 24 x 38 inch mills with roughing rolls, also two cold mills, the whole having a yearly output capacity of 12,000 tons of sheet iron. From July until about two months ago the mills were in continuous operation, but the returns on the capital invested were not satisfactory to the controlling interests, who demanded a reduction of 10 per cent. in the wages of the workmen. The demand was resisted and the men went out on strike. Since that time the plant has been idle.

MANUFACTURING.

Iron and Steel.

An effort to thaw out a frozen pipe in the plant of the New Jersey Steel & Iron Company, Trenton, N. J., resulted in the building catching fire. The firemen were hampered by the extreme cold and a damage estimated at $50,000 was incurred before the fire was finally subdued.

At the annual stockholders' meeting of the Maryland Steel Company, Sparrow's Point, Md., on Wednesday, February 8, the old officers were re-elected as follows: President, F. W. Wood; secretary and treasurer, E. N. Smith; directors, Luther S. Bent, F. W. Wood, R. K. Wood, E. C. Felton and W. S. Franklin.

The Columbian Land & Mining Company of Boston are arranging to start up one of the charcoal furnaces at Grand Rivers, Ky.

The Tyler Tube & Pipe Company, Washington, Pa., manufacturers of charcoal iron boiler tubes, have decided to enlarge their works, and will erect an iron building 40 x 100 feet, which will be built by the Fort Pitt Bridge Company of Canonsburg, Pa. The A. Garrison Foundry Company of Pittsburgh will furnish an 18-inch train of rolls, and the Bass Foundry & Machine Company of Fort Wayne, Ind., a 500 horse-power Corliss engine, while the Babcock & Wilcox Boiler Company, Carnegie Building, Pittsburgh, will supply the boilers. We are advised that the statement that the interests of the Tyler Tube & Pipe Company would be taken over into a consolidated company is without foundation.

The Braeburn Steel Company, Braeburn, Pa., manufacturers of the BS brand of tool steel, are making some additions to their plant and adding some new equipment. Included in this new equipment are three new hammers, two new heating furnaces and a 250-ton steam and hydraulic press. The demand for the fine grades of tool steel made by this concern is constantly increasing, and they are running their works to full capacity.

The Great Western Tin Plate Works, at Joliet, Ill., now owned by the American Tin Plate Company, and which were burned some months since, have been rebuilt. The finishing department was started up last week and the hot mills have been put in operation this week. The plant is in much better shape than originally. The new building is entirely of steel, and is therefore secure against fire. In rebuilding, the manufacturing facilities have been considerably improved but no additions have been made to the machinery, as these works are built of proper size to meet the requirements of the trade which they serve.

Efforts are being made to induce the American Tin Plate Company to operate the plant of the Johnstown Tin Plate Company, at Johnstown, Pa., which has been idle since it was taken over by the American Tin Plate Company. It is a two-mill plant, and it is stated raw material can be obtained to good advantage from the Cambria Steel Company, at Johnstown, Pa.

The Dillon-Griswold Wire Company, Sterling, Ill., have hitherto been running their works exclusively by water power obtained from the Rock River. The extremely cold weather of this winter has for the first time seriously interfered with their regular operations, and to guard against a repetition of a like occurrence the company have just installed a steam plant. This consists of three 250 horse-power Cahall boilers and two engines. One engine is 800 horse-power and the other 300 horse-power. The steam plant starts up this week, after which either steam or water power will be used according to circumstances. The company are also completing their rod mill, and expect to have it running early in March. It will have a daily capacity of 150 to 225 tons of wire rods, all of which will be drawn into wire in the company's own plant.

The Corning Steel Company, Monadnock Building, Chicago, will add two sheet mills and an annealing oven to the equipment of their works at Hammond, Ind., and will also erect a new warehouse. The Lloyd Booth Company, Youngstown, Ohio, will furnish the new mills.

The Sterlingworth Railway Supply Company of Easton, Pa., have erected a large malleable iron plant, which will be put in operation next month and will employ from 150 to 200 men.

The Bear Spring Furnace, Bear Spring, Tenn., closed down on February 5 for repairs, and we are advised will not start up again this year.

It is reported that the Carbon Iron & Steel Company, Mauch Chunk, Pa., will soon begin work on their furnaces, at Perryville, Pa., with a view to the early resumption of the manufacture of iron. It is hoped to have the furnaces in full blast within 60 to 90 days.

Machinery.

We are advised that at the recent meeting of the creditors of the McNeil Boiler Works, Akron, Ohio, it was decided by them not to take any action until June 1. It will depend entirely upon the showing which the company are able to make in the meantime as to what action the creditors will take after that date. There is a movement on hand at the present time for a reorganization of the company, and if the same is not consummated at this time the company will continue in the hands of the receiver, runing as they now are, unless the showing is such that the creditors deem it advisable to close the business. This, however, does not seem likely, as at present the concern are very busy and regard the outlook for the future as very encouraging.

The Harrisburg Foundry & Machine Company, Harrisburg, Pa., have received an order from the Government for two Harrisburg standard engines of 600 horse-power for the Navy Yard at Boston. The same company have placed three of these engines in the Post Office Building at Pittsburgh.

The Playford Stoker Company of Cleveland, Ohio, have received an order from the National Enameling & Stamping Company, St. Louis, for eight 300 horse-power Playford stokers, the order coming through the Frank-Kneeland Machine Company of Pittsburgh, who have the contract for the entire plant.

Somers, Fitler & Clarke, Limited, of Pittsburgh, Pa., are installing tools, including lathes, drills, shapers and boring mill, car wheel press, &c., in the new shops of the Monongahela Street Railway Company, now being erected at Rankin, Pa.

The Sharpsville Foundry & Machine Company, Sharpsville, Pa., have gone into the hands of a receiver, and will be sold at public auction on March 4, including real estate, fixtures and shop. James P. Whitla of Sharon, Pa., is receiver.

The Thew Steam Shovel Company of Cleveland, Ohio, have delivered three Thew automatic steam shovels to the ore yards of the Lorain Steel Company, at Lorain, Ohio.

The Baker Brothers' Foundry & Machine Works, Toledo, Ohio, are making an addition to their foundry, 110 feet long and 70 feet wide, besides additional cleaning rooms. Also an addition 30 x 40 feet to the pattern shop. This gives the concern a molding room 260 x 70 feet.

A meeting of the stockholders of the Westinghouse Machine Company of Pittsburgh will be held in East Pittsburgh on Wednesday, March 1, to take action on approval or disapproval of an increase in capital stock of the company.

The Pittsburgh Pump & Supply Company of Pittsburgh have made application for a charter of incorporation. The incorporators are: W. E. Ross, H. W. Sheets, Ross J. Cavanagh, G. S. Howland and John R. Cavanagh.

Merrill Brothers, manufacturers of drop hammers, of Brooklyn, N. Y., have lost a part of their machine shop by fire. The firm expect to be able to resume the drop hammer business within a month, no patterns having been destroyed.

The Lackawanna Dividend.—The Lackawanna Iron & Steel Company have declared a dividend of $50 per share on their stock and are calling for bids on the $1,200,000 5 and 6 per cent. bonds outstanding on their Scranton plants. The balance of the proceeds of the sale of their Scranton coal lands is retained in the treasury. The surface rights of the lands have been retained, only the coal being sold.

James B. Dill, the well-known New York corporation lawyer, as attorney for the Merchants' Association of that city, has begun the preparation of a bill which will probably be introduced in the present Legislature, providing for the removal of some of the unreasonable restrictions on the business of corporations in New York State. Hundreds of thousands of dollars which rightfully belong to New York have been going to New Jersey and other States because of the restrictive corporation laws of New York.

The Iron and Metal Trades.

There is increasing excitement in the Iron trade and prices are now advancing in leaps and bounds. Continued heavy requirements are coming into the market, both for raw material and for finished goods. Some of the great producers are in a congested condition and instances are quoted of great plants which are practically sold out until October. A growing disposition is observed to try to cover for as much of the second half as is possible.

Bessemer Pig in the Central West has been advanced $1 per ton and is now $12, Valley Furnace. It is reported that a large concern purchased about 50,000 tons in the open market for a plant in the Cleveland district, needing their own Iron at the home plant. Beyond this the volume of business in this branch has been small. Quite a large demand has developed, however, in the Central West for Basic Pig, chiefly for the second half. One concern are in the market for about 40,000 tons.

In Foundry Iron the market is very stiff. The furnaces in Eastern Pennsylvania have made good sales, while Southern concerns have again sold largely for export, the aggregate being 30,000 tons, of which 10,000 tons was Basic Pig.

For prompt Steel there is almost a famine and as high as $21 has been paid in the Cleveland district and $22 and upward in the East. The volume of business, however, is small. Wire Rods are not to be had at any price, the leading producer needing its output for its own requirements.

Steel Rails in the East have advanced to $22 under a fair business. The price has now reached a point where we are no longer under the parity of the world's markets and must surrender the export trade unless willing to sell at a concession, or unless the foreign prices advance. It looks as though an order for 42,000 tons for China would go abroad.

In the Plate trade the pressure continues unabated. The Carnegie Company have entered into a ten-year sliding scale contract to furnish the Pressed Steel Company with their Plates, Axles, &c., the quantity involved, when present plans have matured, being from 900 to 1000 tons per day. The Carnegie Company withdraw from the contemplated car building enterprise.

The contract for the towers and shore spans of the new East River bridge goes to the New Jersey Steel & Iron Company and the material probably to Pittsburgh. The quantity involved is about 12,000 tons, 7000 tons being Plates. The requirement that the Steel must be Open Hearth made by the Pig and Ore process greatly restricted the sources of supply and enhanced the cost.

In Chicago orders calling for about 6000 tons of Structural Material have been placed, and 12,000 tons of Bridge work is pending.

It appears that progress is being made with the bridge builders' pool, which J. P. Morgan & Co. are to finance. It is to take in the leading builders of railroad bridges, highway bridges and buildings. It is understood that those interested in a number of large plants are active in the work.

The first skirmishes between the Cast Iron Pipe Consolidation and the outside shops in Eastern territory have taken place. Quite a fair tonnage of work is coming out.

Continued efforts are being made to get the manufacturers of Steel Pipe together, the consolidation to be carried through under the auspices of J. P. Morgan & Co.

Although at an early date the subscriptions are due by the underwriters of the National Steel Company, it is not yet definitely settled whether the Oliver Ore interests will be included.

The Sheet makers are to have a meeting in Pittsburgh at an early date, and the Western Bar Iron manufacturers are in session, but nothing has yet been announced as to the result of their deliberations.

The principal item of interest in the Metal trade is a further advance in the price of Tin Plate of 25c. per box. Spelter has continued its extraordinary rise. Copper is very dull at a shade under 18c., a price at which every consumer will restrict his purchases to the minimum while every producer strains every means to get out more metal.

A Comparison of Prices

At date, one week, one month and one year previous.

Advances Over the Previous Month in Heavy Type. Declines in Italics.

	Feb. 22, 1899.	Feb 15, 1899.	Jan. 25, 1899.	Feb. 23. 1898.
PIG IRON:				
Foundry Pig, No. 2, Standard, Philadelphia	**$12.25**	$12.25	$11.50	**$10.75**
Foundry Pig, No. 2, Southern, Cincinnati	.....	12.60	10.75	9.25
Foundry Pig, No. 2, Local, Chicago	**12.50**	12.50	11.50	10.75
Bessemer Pig, Pittsburgh	**12.50**	11.50	11.00	10.25
Gray Forge, Pittsburgh	**11.50**	11.25	10.00	8.90
Lake Superior Charcoal, Chicago	**13.00**	12.50	12.00	11.00
BILLETS, RAILS, ETC.:				
Steel Billets, Pittsburgh	**19.50**	18.00	17.25	15.25
Steel Billets, Philadelphia	**22.00**	20.50	19.10	17.30
Steel Billets, Chicago	**21.00**	20.00	18.50	17.25
Wire Rods, Pittsburgh	.....	.....	.....	22.50
Steel Rails, Heavy, Eastern Mill	**22.00**	20.00	19.00	18.00
Spikes, Tidewater	1.50	1.50	1.50	1.50
Splice Bars, Tidewater	**1.15**	1.15	1.10	**1.15**
OLD MATERIAL:				
O. Steel Rails, Chicago	8.00	8.00	8.00	8.50
O. Steel Rails, Philadelphia	**12.00**	.....	11.50	**10.50**
O. Iron Rails, Chicago	**14.00**	14.00	13.50	12.25
O. Iron Rails, Philadelphia	**13.75**	13.75	13.50	**12.50**
O. Car Wheels, Chicago	**13.00**	13.00	12.00	**11.50**
O. Car Wheels, Philadelphia	**12.50**	11.00	10.75	10.50
Heavy Steel Scrap, Chicago	**8.00**	8.00	7.75	**7.50**
FINISHED IRON AND STEEL:				
Refined Iron Bars, Philadelphia	**1.20**	1.20	1.15	1.10
Common Iron Bars, Youngstown	1.10	1.05	1.10	0.95
Steel Bars, Tidewater	**1.20**	1.20	1.15	1.10
Steel Bars, Pittsburgh	**1.20**	1.10	1.05	0.95
Tank Plates, Tidewater	**1.65**	1.60	1.40	1.10
Tank Plates, Pittsburgh	**1.50**	1.50	1.35	1.00
Beams, Tidewater	**1.45**	1.45	1.40	**1.30**
Beams, Pittsburgh	1.30	1.30	1.30	1.15
Angles, Tidewater	**1.35**	1.35	1.30	**1.15**
Angles, Pittsburgh	1.20	1.20	1.20	1.00
Skelp, Grooved Iron, Pittsburgh	**1.35**	1.25	1.20	1.05
Skelp, Sheared Iron, Pittsburgh	**1.45**	1.35	1.35	1.10
Sheets, No. 27, Chicago	**2.25**	2.20	2.00	**2.05**
Sheets, No. 27, Pittsburgh	**2.05**	2.05	1.95	1.95
Barb Wire, f.o.b. Pittsburgh	**2.10**	2.10	1.95	1.75
Wire Nails, f.o.b. Pittsburgh	**1.60**	1.60	1.50	1.45
Cut Nails, Mill	**1.35**	1.35	1.20	1.10
METALS:				
Copper, New York	**17.90**	18.00	15.75	11.50
Spelter, St. Louis	.....	6.00	5.15	3.80
Lead, New York	**4.40**	4.50	4.00	3.80
Lead, St. Louis	.....	4.30	4.05	3.50
Tin, New York	*24.25*	23.75	24.50	14.10
Antimony, Hallett, New York	**10.00**	9.75	8.75	**7.50**
Nickel, New York	38.00	38.00	38.00	33.00
Tin Plate, Domestic, Bessemer, 100 lbs., New York	**3.69**	3.44	3.15	3.00

Chicago. (*By Telegraph*)

Office of *The Iron Age*, 805 Fisher Building,
CHICAGO, February 21, 1899.

The market continues in as good condition as previously reported. Producers are, however, getting into worse condition so far as deliveries are concerned. The leading Steel manufacturers are especially well sold up on everything. Plates and Standard Section Rails are sold furthest ahead, but on a great many other articles the mills cannot make delivery earlier than six to eight weeks. The demand for prompt shipment on some classes of material is urgent and buyers are now advancing prices instead of sellers by offering inducements to secure better deliveries. The consequence is that advances of 50c. to $1 per ton and in some cases considerably more have been made all along the line.

Pig Iron.—The largest reported sale during the week was one of 2000 tons of Southern Iron, part being for reasonably early delivery. The general demand has been for small lots, but some inquiries have been made for good quantities. These inquiries have been for deliveries beginning July 1, and covering 12 months. Producers have endeavored to discourage contracts of this character, advising their customers to be patient and that probably the feverish symptoms now existing would shortly subside. Some buyers, however, are apprehensive that such symptoms are simply preliminary to a further sharp advance and will not wait. It is reported that the leading producers of Iron in this vicinity are themselves purchasing Iron to cover their necessities in their Steel department. More Southern companies have withdrawn from the market, still further reducing the ranks of sellers. Advances have been made since last report of 50c. to 75c. on almost all kinds of Iron sold in this market. We quote for cash as follows:

Lake Superior Charcoal	$13.00 to $14.00
Local Coke Foundry, No. 1	13.00 to 13.50
Local Coke Foundry, No. 2	12.50 to 13.00
Local Coke Foundry, No. 3	12.00 to 12.50
Local Scotch, No. 1	13.00 to 13.50
Ohio Strong Softeners, No. 1	13.50 to 14.00
Southern Silvery	..... to .....
Southern Coke, No. 1	13.75 to 14.00
Southern Coke, No. 2	13.50 to 13.75
Southern Coke, No. 3	13.00 to 13.25
Southern Coke, No. 1 Soft	13.75 to 14.00
Southern Coke, No. 2 Soft	13.50 to 13.75
Foundry Forge	..... to .....

Gray Forge and Mottled	.....	to	.....
Southern Charcoal Softeners	13.00	to	13.50
Alabama and Georgia Car Wheel	16.00	to	17.00
Malleable Bessemer	13.00	to	13.50
Standard Bessemer	13.00	to	13.50
Spiegel, 20 per cent.	.....	to	30.00
Jackson County Silvery, according to Silicon	13.50	to	14.50

Bars.—The movement to consolidate the Western Bar mills is going ahead, but nothing definite can yet be announced. Meanwhile consumers are actively covering their requirements. Inquiries are being received for large quantities and manufacturers are asked to give options, which when refused frequently result in immediate orders. The market is very firm at 1.17½c. to 1.25c., Chicago, for mill shipments of Common Iron. The demand for Steel Bars is very strong and the local mills are rapidly filling up with work. Prices are firm at 1.20c. to 1.25c., with indications of a further advance during the week. Jobbers are having a good demand from stock and quote small lots at 1.30c. to 1.40c., full extras, for Bar Iron, and 1.30c. to 1.40c., half extras, for Soft Steel Bars, with 3.10c. for Norway and Swedish.

Car Material.—Producers of all kinds of Car material report a continued active demand with fine sales of everything in this line.

Structural Material.—A great deal of activity is noted in bridge material, while a considerable number of buildings are about ready to be placed in this city and in several cities further West. Contracts have been entered for about 6000 tons of Structural Material, and at least 12,000 tons of bridge work are in sight. Mill shipments are quoted as follows, Chicago delivery: Beams and Channels, up to 15 inches, 1.45c. to 1.50c.; 18 to 24 inches, 1.55c. to 1.60c.; Angles, 1.35c. to 1.40c.; Universal Plates, 1.65c.; Tees, 1.50c. to 1.60c. Small lots from store are selling at 1.80c. to 1.90c. for Beams and Channels, 15 inches and less; 1.45c. to 1.50c. for Angles, and 1.60c. to 1.65c. for Tees.

Plates.—The situation is extremely strong and prices are being quoted only on such shipments as the mills can make during the last half of the year. Discrimination is the rule even in such cases, the various mills taking more care of their regular customers than of those from whom they only rarely receive orders. A heavy demand is being thrown on jobbers for prompt shipment. Mill shipments for such deliveries as can be made are quoted as follows, Chicago delivery: Tank Steel, 1.45c.; Flange, 1.55c.; Marine, 1.80c.; Common Fire Box, 2c.; Best Fire Box, 3c. to 4c.

Merchant Pipe.—The advance made recently did not long check business. An active trade has been in progress since our last report and the mills have been placed in worse condition as to deliveries. Another advance was announced on Monday. Mill shipments are as follows: Butt Weld Black, 55 per cent.; Lap Weld Black, 65 per cent.; Butt Weld Galvanized, 45 per cent.; Lap Weld Galvanized, 50 per cent., with an additional four 10's and 7½ per cent. off. Merchant Boiler Tubes are quoted at 65 and 5 per cent. off on 2 and 2½ inch, and 70 and 5 per cent. off on 2¾-inch and larger.

Sheets.—The Sheet mills are quite generally well sold up, and it is difficult to find one able to promise deliveries even in May or June. Those who can do so can obtain for mill shipments 2.25c. to 2.30c., Chicago, for No. 27 Black Sheets, and 75 and 10 per cent. off for Galvanized, with 15c. freight allowance. Small lots of No. 27 Black are quoted by jobbers at 2.50c. to 2.60c., and Galvanized at 75 and 5 per cent. off.

Merchant Steel.—Trade continues excellent, with as much business being offered as the mills are able to consider in their present crowded condition. Mill shipments, Chicago delivery, are quoted as follows: Smooth Finished Machinery Steel, 1.60c. to 1.65c.; Smooth Finished Tire, 1.50c. to 1.55c.; Open Hearth Spring Steel, 1.75c. to 1.80c., base; Sleigh Shoe, 1.35c.; Toe Calk, 1.70c., base; Ordinary Tool Steel, 5.50c. to 7c.; Specials, 10c. and upward.

Billets and Rods.—Some Open Hearth Billets have been sold here at close to $23.50. The local producers have no Bessemer Billets to offer, but they are nominally quoted at $21, while Wire Rods are worth at least $28, with none to be had in this vicinity.

Rails and Track Supplies.—Rails are firmly held at $23 for Standard Sections and $21 to $24 for Light Sections, with considerable inquiry and some tonnage being placed. The mills are sold so far ahead it is extremely difficult to arrange satisfactory deliveries. Track Supplies are quoted as follows: Splice Bars, 1.25c.; Spikes, 1.55c. to 1.60c.; Track Bolts, with Hexagon Nuts, 1.90c. to 2c.; Square Nuts, 1.80c. to 1.90c.; Steel Links and Pins, 1.45c. to 1.50c.; Iron Links and Pins, 1.45c. to 1.50c.

Old Material.—Business is dull, but mainly because the supply now offering is quite small. The railroad lists now coming out present only meager quantities. Old Iron Rails are in particularly short supply. Some small sales have been made in the interior of the State, but no movement is reported here. Cast Scrap is higher in sympathy with the advancing price of Pig Iron and not much is being offered. Dealers' selling quotations are nominally as follows, per gross ton: Old Iron Rails, $14; Old Steel Rails, mixed lengths, $8 to $8.50; selected long lengths, $9 to $10; Relaying Rails, $14 to $15; Old Car Wheels, $13 to $13.25; Heavy Melting Steel Scrap, $8 to $8.25; Mixed Steel, $7 to $7.25. The following selling prices are per net ton: No. 1 Railroad Wrought, $12 to $12.50; Dealers' Forge, $10.25 to $10.50; Fish Plates, $13 to $13.50; No. 1 Mill, $7.75 to $8; Heavy Cast, $9.25 to $9.50; Stove Plates, $6.50; Iron Car Axles, $14.50 to $14.75; Horseshoes, $10 to $10.50; Cast Borings, $4.25; Steel Axle Turnings, $6.75; Iron Axle Turnings, $7.25; Machine Shop Turnings, $6 to $6.25.

Metals.—Carload lots of Lake Superior Copper are steady at 18⅝c., and Western, 18c. Pig Lead weakened a few days since with considerable quantities offered by producers, but has again become firm at 4.32½c. to 4.35c. Spelter is strong at 6c. to 6¼c., but not much is available even at these prices.

Tin Plates.—Manufacturers report an extraordinary demand, which promises to tax the capacity of all the works. They have advanced prices 25c. per base box this week. Jobbers are having a good trade.

Pittsburgh.

Office of *The Iron Age*, Hamilton Building, Pittsburgh, February 21, 1899.

(By Telegraph.)

Pig Iron.—The Valley furnaces, composing the Bessemer Furnace Association, are practically sold up for the next three or four months, and there is very little surplus Bessemer Iron to be had this side of July. With this condition prevailing, together with the heavy tonnage in Billets and Finished Material, they have decided that they might get more money for what Iron they have to spare, and on last Saturday the price was advanced from $11 to $12, at Valley furnace, and the market is strong at that price. There are no large inquiries in the market outside of one for 10,000 tons from a Pittsburgh interest. It is intimated that the price will be advanced again by the furnaces before long. The supply of Gray Forge is still short, and Valley furnaces quote $11 at furnace, equal to $11.65, Pittsburgh. The market is firm at $11.50 to $11.75, Pittsburgh. Foundry Irons are higher, and up to $11.75, Pittsburgh, is being quoted for No. 2. We quote Bessemer Pig, $12; Gray Forge, $11, both at Valley furnace; No. 1 Foundry, $12 to $12.25; No. 2 Foundry, $11.50 to $11.75; Gray Forge, $11.50 to $11.75; Bessemer, $12.50 to $12.65, all f.o.b. Pittsburgh district. We quote sales of Bessemer of probably 5000 tons at $11, Valley furnace, made before the price was advanced.

Billets.—The action of the Valley furnaces in advancing Bessemer Pig $1 a ton has put up the price of Billets fully $1, and small lots of Steel, with prompt delivery guaranteed, have sold at $20, Pittsburgh. The formation of the National Steel Company leaves only three sellers of Steel in the Pittsburgh district, these being Carnegie, Shoenberger and Jones & Laughlins. These concerns are so crowded with orders that they have practically no Steel to spare, and prompt Billets can hardly be had at any price. Of course, it is expected that the National Steel Company will be sellers of Steel, as the plants they have purchased have a total annual output of close to 1,250,000 tons of Steel, while the Sheet and Tin Plate interests will not take more than half that amount. Billets sold in good sized lots last week on the basis of $19, Youngstown mill. We quote Billets at $19.50 to $20, maker's mill, depending on delivery. The tendency of prices is decidedly upward.

Sheet Bars.—We are advised of a sale of 7000 tons of Sheet Bars on the basis of $20.25, delivered in Pittsburgh district and for extended delivery.

Muck Bars.—Prices are much higher. We note a sale of 1000 tons of standard grade Muck Bars at $20.50, delivered in Pittsburgh district.

Merchant Steel Bars.—Prices have again advanced. A leading local mill have put their price on Steel Bars to 1.25c., minimum.

(By Mail.)

A boom has struck the Iron market, and prices on nearly everything are going rapidly skyward. There is a famine in Pig Iron, Billets and nearly all kinds of Finished Material, and mills that have anything to sell for early delivery can get practically any price they ask. Last Saturday the Executive Committee of the Bessemer Pig Iron Association met in Youngstown, and as a result the Central Selling Agency in Pittsburgh have been notified not to sell any Bessemer Pig under $12. Valley furnace. Prompt Steel Billets can hardly be had at any price, and have sold in small lots, where deliveries are guaranteed, at $20, makers' mill. Sheet Bars are very high, and a sale of 7000 tons is reported at $20.25, delivered f.o.b. Pittsburgh, deliveries extending over the next four months. In Finished Material, Structural Shapes are unchanged. Sheared Plates are 1.50c., minimum, and 1.60c. has been quoted for early delivery. Merchant Steel Bars are 1.15c., minimum, and one leading mill has retired from the market as seller. Rails, Standard Sections, are $22, minimum. Sheets have advanced fully $2 a ton in the past week. Skelp is a couple of dollars higher, and Casing has been advanced. The whole market is very much excited and the price of Billets may be carried up to $24 or $25, with proportionate advances in Finished Material, in a very short time. It is to be regretted that this condition, which bids fair to be a repetition of 1895, should have come, but it does not seem it could have been prevented. We know positively that large sellers have endeavored to hold the market and keep prices from advancing, but were utterly unable to do so. As we have repeatedly stated, it is not a question of price, but to find a mill that has anything to sell. Sheet mills, Plate mills, Pipe mills, and in fact makers of nearly all kinds of material have sold up practically all they can make to July, and buyers who have been caught short are now paying the piper. Prices quoted in this report are those prevailing at the time it is written. Within 48 hours they may be $1 or $2 a ton too low. Parties who have material are trying to hold it, knowing that it is only a question of a few days until they will get more money for it.

Ferromanganese.—There is practically nothing doing, consumers of Ferro being covered for first half of the year. Prices are unchanged, and we quote domestic Ferro at $50 in large lots and $52.50 in carload lots. Spiegel is higher and we now quote at $24.50 to $25, delivered.

Plates.—The event of the week has been the arrangement just consummated between the Carnegie Steel Company, Limited, and the Pressed Steel Car Company, by which the former agree to abandon their intention to go into the Steel Car business, in consideration of a contract by which they will furnish to the Pressed Steel Car Company all the Plates, Shapes and Angles they will use in the next 10 years. Within six months the Pressed Steel Car Company will be using 900 to 1000 tons of Plates per day, so that some idea can be formed of the tremendous tonnage involved in this agreement. An outlet for the Plates to be made in the new Plate mills being built by the Carnegie Steel Company, Limited, is assured. Heavy contracts for Plates have been placed by boat builders and other consumers in the past week, and it is difficult to find a Plate mill that has any material to spare this side of July. Boiler makers have advanced their prices very materially, and still higher prices for Plates in a very short time are practically certain. The absolute minimum of the market is 1.50c., and we are advised up to 1.60c. has been offered for early delivery. We quote: Tank, ¼-inch and heavier, 1.50c. to 1.60., depending on delivery; Flange, 1.60c. to 1.65c.; Marine, 1.70c. to 1.75c.; Ordinary Fire Box, 2c.; Locomotive Fire Box, 2.75c. up to 3c., depending on quality.

Structural Material.—Some large contracts for Structural Material are coming up in New York City, and the tonnage from the East promises to be heavier this year than ever before. Last week two buildings were placed calling for about 5000 tons, and another of about 2000 tons will likely be given out this week. The outlook for this year is referred to by the Beam mills as being very encouraging, but it is not anticipated that prices will be advanced in the near future. The makers of Structural Material are inclined to be very conservative and not put prices so high that demand will be shut off. We quote Beams and Channels, 15-inch and under, 1.30c.; 18, 20 and 24 inch, 1.40c.; Tees, 1.35c.; Angles, 1.20c.; Zees, 1.30c., all f.o.b. cars Pittsburgh.

Rails.—The situation is very strong and a further advance in prices before long is not unlikely. Billets are now within $3 of the price of Rails. We quote Steel Rails, Standard Sections, at $22, Pittsburgh; Light Sections, 25 to 40 pounds, $22 to $24, depending on the order and deliveries; 16 to 20 pound Rails are held at $25, all f.o.b. Pittsburgh.

Spelter.—A new record has been made since our report of last week, and prime grades of Western Spelter are quoted at $6.40c. in this market, with a probability of still higher prices. Not since the boom of 1879 has the price of Spelter been as high as it is at the present time.

Sheets.—Since our last report the price of Sheets has gone up fully $2 a ton. The output of the Sheet mills is all practically under engagement up to July, and none of the mills are selling for delivery beyond July 1. Buyers who have delayed covering are now in the market and anxious to place orders, but find the mills not disposed to sell, and are compelled to pay stiff prices. There is a good deal of range in prices now being quoted, depending largely on the order and deliveries wanted. In fact, the deliveries have a good deal to do with making the price. We quote No. 27 Black Sheets, box annealed, one pass through cold rolls, at 2.05c. to 2.15c.; No. 28, 2.10c. to 2.20c., prices depending on the order and the deliveries. There is practically a famine in Galvanized Sheets and none of the mills have any tonnage to speak of to spare in the next two or three months. Where a mill is in position to guarantee reasonably early delivery on Galvanized Sheets, almost any price that is asked can be obtained. With Sheet Bars above $20 and Spelter close to 6.50c., higher prices are practically certain. We quote Galvanized Sheets at 75 and 10 per cent., which is the minimum of the market for desirable orders, and for small lots higher prices are being obtained.

Bars.—A leading local mill has practically retired from the market as a seller of Merchant Steel Bars, its tonnage for the next three or four months all being under engagement. With prices on Billets going up very fast, Steel Bars are higher and the absolute minimum of the market to-day is 1.15c., Pittsburgh, half extras. We are advised that as high as 1.20c. is being quoted. There is a very heavy demand, and Steel Bars for prompt shipment cannot be obtained. The situation in Iron Bars is practically the same, the Valley mills all being well sold up for the next couple of months. The demand from large consumers, such as car builders and bridge works, is enormous, and keeps the mills filled up to their utmost capacity. The famine in Mill Iron and the very high prices ruling are having the effect of further advancing prices on Iron Bars. We have advanced prices and quote at 1.10c. to 1.15c., and are advised that some sellers are holding firmly for our higher quotation.

Merchant Steel.—Demand is enormous, and all the mills are considerably behind in deliveries. The car shortage is aggravating the situation, and there is much complaint from customers over delayed shipments. Prices are exceedingly firm and another advance all along the line is probable. We quote: Tire Steel, 3-16 to ¾ inch and heavier, 1.30c. to 1.35c.; Toe Calk, 1.40c. to 1.45c.; Plow Slabs, under 4 inches wide, 1.35c.; over 4 inches wide, 1.50c.; Spring Steel, common, 1.30c. to 1.35c.; Open Hearth, 1.50c. to 1.60c.; Crucible, 2.25c. to 2.35c.; Machinery Steel, Open Hearth, 1.40c. to 1.50c.; Cutter Shoes, 2.15c. to 2.25c.; Cant Hook Steel, Open Hearth, 2¾c.; Crucible, 3¼c.; Sleigh Shoe Steel, 1.40c.; Horseshoe Steel, 1.45c.; Rolled Lay Steel, 2¾c.; Hammered Lay Steel, 3¼c.; Tool Steel, ordinary grades, 4¾c. to 6c.; best grades, 9c. and upward.

Pipes and Tubes.—The situation in the Pipe trade is simply that the demand is so heavy that the output of the Pipe mills is practically all engaged for the next three or four months, and early deliveries cannot be obtained. Some matters of considerable interest to the Pipe trade are under way, and may materially affect the situation. The movement to take over the Pipe mills into one company has not been abandoned as reported. Prices are exceedingly firm, and we quote Merchant Pipe as follows: Butt Black, 55 per cent.; Lap Black, 65 per cent.; Butt Galvanized, 45 per cent.; Lap Galvanized, 50 per cent. Additional discounts are five 10's and 2½ per cent. for small lots and five 10's and 2½ and 5 per cent. on carloads. At a meeting of local mills making Casing held last Friday, an advance of 2½ per cent. on base discounts was made. We now quote Screw and Socket Casing, 55 and 10 per cent.; Inserted Joint Casing, 55 per cent., with an additional 5 per cent. on both kinds to dealers. The Boiler Tube manufacturers are in session in New York City to-day (Tuesday), and it is not unlikely an advance in prices will be made. However, some mills oppose this, and it may not be done. We quote Boiler Tubes as follows: 1¼ and 1½ inch iron, 60 per cent. discount; Steel, 60 per cent.; 1¾ to 2½ inch, inclusive, Iron, 65 per cent.; Steel, 70 per cent.;

2¾-inch and larger, Iron, 70 per cent.; Steel, 72½ per cent., with 5 per cent additional to dealers.

Iron and Steel Skelp.—There is heavy demand and with the high prices for Mill Iron and Billets there has been a further advance in prices on both Iron and Steel Skelp. All the mills rolling Skelp are well sold up and very firm in their ideas as to prices. We have again advanced quotations and now quote the market as follows: Grooved Steel Skelp, 1.15c. to 1.20c.; Sheared Steel Skelp, 1.35c. to 1.40c.; Grooved Iron Skelp, 1.35c. to 1.40c.; Sheared Iron Skelp, 1.45c. to 1.50c., all four months, or 2 per cent. off for cash, 30 days, f.o.b. cars delivered in Pittsburgh district.

Connellsville Coke.—In answer to the report that the H. C. Frick Coke Company have recently bought a large acreage of Coal lands in West Virginia, we can state that "neither the H. C. Frick Coke Company nor any official or stockholder individually has purchased the Coal lands referred to, and does not contemplate buying this or any other Coal property in West Virginia whatever." There is an enormous demand for both Furnace and Foundry Coke, and production last week in the Connellsville region was close to 170,000 tons, the largest output in any one week in the history of the Coke trade. Prices are very firm, and we quote Furnace Coke at $1.60 and Foundry Coke at $1.90 to $2.30, all in tons of 2000 pounds, f.o.b. cars at oven.

Philadelphia.

Office of *The Iron Age*, Forrest Building,
PHILADELPHIA, PA., February 20, 1899.

The week has been a broken one in many respects, but as regards Iron and Steel, the market has shown remarkable strength. Pig Iron is quoted at last week's figures, but there is very little for sale, so that needy buyers have no alternative but to pay full prices. In Finished Material the feeling is even stronger, as the scarcity appears to be greater, and prices relatively more disposed to advance. This is specially the case as regards Billets and Slabs, as well as Plates, which are all higher than they were a week ago, and in fact are hardly quotable, as it is only once in a while that prompt deliveries can be arranged on lots of any size. It is clear, therefore, that the situation is altogether in favor of sellers, although there is no disposition to take advantage of those who have over-stayed the market. This is due to the belief that with the increased output which may be expected in the near future, the supply will be sufficient to meet all legitimate requirements, and that advances in prices which cannot be maintained are liable to do more harm than good. Experience has demonstrated that whenever sellers begin to shade prices, buyers curtail their orders, and thereby cause increased weakness. Conditions now ruling appear to be of the most satisfactory character, however, and while it would not be difficult to advance prices because of the immense demand, yet producers prefer to feed out reasonable quantities something near to current quotations, leaving the future to take care of itself. Prospects, as already stated, could hardly be better than they are, and while higher prices are by no means improbable, it is quite likely that there will not be much change temporarily, the final outcome being contingent upon circumstances not yet developed.

Pig Iron.—It is difficult to define the exact condition of the market because of the extreme scarcity. Makers have so many orders on their books, and so little Iron on furnace banks that they do not want business at any price which a buyer would be willing to pay. Of course, it may be that the scarcity is not so great as appears on the surface, because large lots sold for forward delivery necessarily implies large lots bought, so that one offsets the other. Nevertheless the bare condition of the furnace banks shows that what has been bought has so far gone into consumption, consequently there is not only no danger of oversupply in the near future, but some probability of continued scarcity, providing business continues to increase, in regard to which prospects are quite as favorable as at any time within the past six or eight months. Beyond this there is not much room for comment, as time alone can tell what the next movement will be. Sales during the past few days have been at about the following figures for seaboard deliveries, subject to the usual freight allowances at points within a radius of 100 miles south or west: No. 1 X Foundry, $13 to $13.50; No. 2 X Foundry, $12.25 to $12.50; Plain, $11.75 to $12; Standard Mill Iron, $11.50 to $11.75; Basic, nominal at $11 to $11.25; Low Phosphorus, $16.50 to $17.

Billets and Slabs.—The market is very unsettled and hardly quotable at the moment. About 5000 tons were sold at a figure close to $21.50 late last week, but prices would be higher to-day. Possibly $22 might be accepted, but there is no certainty about it, and some parties in the trade say that buyers would have to go pretty near to $23 to secure anything like fair-sized lots. The difficulty is that makers appear to be oversold, and are pushed to the utmost to meet the demand for lots which are due for February and March deliveries.

Plates.—Business is crowding in more than ever, and prices are again dearer. Deliveries on contracts made some time ago for spring delivery are called for with so much urgency that it is almost impossible to squeeze new business in, and as a consequence orders are being turned down on all sides. The output has been somewhat interfered with by bad weather during the past week or ten days, but from this time forward it is expected that fair increases will be made, and the tension somewhat relieved thereby. Seaboard quotations for carload lots and upward are about as follows: Tank Plates, 1.65c. to 1.70c.; Flange, 1.85c. to 2c.; Fire Box, 2c. to 2.25c.

Structural Material.—The demand is very active, and while combination prices are quoted on large lots a great deal of miscellaneous business is being done at one to two-tenths more money. It is intimated that important changes are pending, but meanwhile we quote as before seaboard deliveries as follows: Angles, 1.35c. to 1.45c.; Beams and Channels, 1.40c. to 1.60c., according to quantity and specification.

Bars.—The demand is very heavy, and prices are again dearer in accordance with higher cost of production. Mills are running to their fullest capacity, with prices as follows for carload lots and upward, seaboard or equivalent deliveries: Ordinary Bars, 1.10c. to 1.15c.; Refined Bars, 1.20c. to 1.25c.; Test Bars, 1.25c. to 1.30c.; Steel Bars, 1.25c. to 1.30c.

Sheets.—Activity and firmness are noticeable in this line, especially in the low numbers, for which quotations are about as follows (Common Sheets, two-tenths to three-tenths less money): No. 10, 1.60c. to 1.70c.; No. 14, 1.80c.; No. 16, 1.90c. to 2c.; Nos. 18-20, 2.30c.; Nos. 21-24, 2.40c.; Nos. 26, 27, 2.50c.; No. 28, 2.60c. to 2.70c.

Old Material.—The demand is very active, and full prices are obtained for nearly all descriptions, with sales at about the following prices, delivered in buyers' yards: Cast Borings, $8 to $8.25; Wrought Turnings, $9 to $9.25; Machinery Cast, $10 to $10.25; Old Car Wheels, $12.50 to $13; Heavy Steel Scrap, $11.75 to $12.25; Steel Rails, $12 to $12.50; Iron Rails, $13.75 to $14; Choice Railway Scrap, $13.75 to $14; Iron Axles, $15.50 to $16; Steel Axles, $13 to $14.

Pilling & Crane have removed their offices from the third floor of the Girard Building to the more commodious rooms, Rooms 614, 615 and 616, in the same building.

Cleveland.

CLEVELAND, OHIO, February 20, 1899.

Iron Ore.—Although furnacemen have not yet secured all the Ore they desire, nor Ore shippers all the tonnage needed on contracts, it is pretty generally conceded that the Ore men have in their sales to the furnaces rather overestimated the capacity for delivery. The problem is involved to an extent with the paucity of labor at the mines, with little hope of a material improvement in the situation, but the factor which is causing the greatest uneasiness is the slight probability of any remedy being found for the existing car famine. There is no doubt that vessels can be found to move all the Ore that can be mined. The 18 new vessels which will be available for Ore carrying at the opening of the season or thereabout will have an aggregate capacity of 97,700 tons on a draft of 17 feet 6 inches, and an allowance for the increase in capacity that will be secured by the lengthening of several boats built some years ago will bring this aggregate considerably beyond 100,000 tons. From the standpoint of the vesselmen conditions have improved sufficiently during the past week to force the conviction that the majority of them sacrificed their own interests in making season contracts at 60c. There is a free offering of 60c. for Marquette contracts for the season, and so great has been the demand for Escanaba tonnage that shippers have made concessions to the extent of offering 50c. on contracts running merely to October 1. Even under these circumstances the offering of tonnage has been meager, owing to the unsettled condition of the Coal situation and the uncertainty of upbound cargoes. Ore shippers on the other hand are not disposed to concede the claims made by some vesselmen, and assert that in all probability the "wild" rate at the opening of the season will not be in excess of 50c., as against 60c. on contracts. Vesselmen, however, claim that 60c. can be had for vessels during the spring and summer. The vesselmen who are object-

ing to the project to inaugurate night work on the docks are almost invariably owners of "wild" tonnage. The owners who have contract Ore—and they represent fully 60 per cent. of the total—are enthusiastic in its favor. Ore sales agents generally discredit the predictions that this interest, of which Cleveland is the center, will be affected to any extent by the tendency of Finished Material producers to own their own mines. They say that the Ore sales agents are almost without exception so heavily interested as owners of mines that the possibility of the prediction coming true is precluded.

Pig Iron.—The strength of the market is indicated by an advance of 25c. in prices, Valley quotations now being on the basis of Foundry No. 1, $11.75, and Foundry No. 2, $11.50, Valley. There is nothing to indicate a diminution in the demand, and so great is the activity that it is almost impossible to make quotations for a longer period than a few days at the outside.

Finished Materials.—The Illinois Steel Company have secured the contract for the Plate for a steamer and two barges of the largest lake type, for which the contract has been let to the American Steel Barge Company of West Superior, Wis., by the Bessemer Steamship Company of Cleveland (Rockefeller interest). The contract for a steamer of similar size was at the same time placed with H. W. Wheeler of Bay City, Mich., but no announcement has yet been made as to the Plate contract. An advance is noted in prices of Ship Plate, quotations now ranging 1.60c. to 1.70c., as against 1.50c. a week ago. Bar Iron is strong at 1.15c., Cleveland, an advance of 5c., and Sheets also show an advance, the present quotation on No. 27 being 2.30c., at Cleveland. Some attempts have been made to close up business in Sheet Bar tonnage for the latter half of the year, but so far as can be learned no quotations whatever are being made beyond July 1. An advance in Pipe prices is regarded as a probability, and there is a rumor of the possibility of a change of list.

Old Material.—Old Material men are decidedly bullish in their talk on prices, and report sales of a number of small lots of 100 to 150 tons. No. 1 Cast is quoted at $9.75, Iron Rails $15.50, and it is alleged that sales of Car Wheels have been made at Buffalo at $15, and that $6.75 has been paid at Cleveland for Cast Borings.

Birmingham.

BIRMINGHAM, ALA., February 18, 1899.

The late bad spell of weather was against the usual production of Iron, as material could not be assembled at the furnaces as required. There were several mishaps, all fortunately of a temporary nature, but they led to the banking of several of the stacks for a few days. All are now at work. We never before, in the 27 years of record kept, have had to suspend operations on account of the elements. No one anticipated a lively business or even a lively inquiry. Yet we have had both, and much more than was desired. The market was strong enough before, and this demand, coming as it did from all classes of the trade, has unquestionably further strengthened it. While it is impossible to obtain all the prices accepted, it can be stated with certainty that Gray Forge sold at $8.50 and some at $8.75; No. 2 Foundry at $9.50, and 500 tons above that price; No. 2 Soft also sold at $9.50, which would make No. 3 Foundry about $9. The majority of sales were for delivery last half the year. A few were for spot or nearby delivery. As yet there are no regular differences between grades. It is a sort of "catch as you can" market, where you can nearly always find some fellow who has gotten in on more favorable terms than his neighbor. But this week the prices and amounts named have been so quickly snapped up that the predominant feeling seemed to be to get in at any price sellers made. The demand comes from buyers of high and of low degree. It is countenanced by those whose reputation for shrewdness is proverbial, for they are in the lead of the buying. It is a suddenly developed general buying movement, and the character of the buyers precludes any suspicion of speculation. The Iron is being bought to melt. The leading seller said to your correspondent: "You cannot make it too strong this week, for the avalanche has started and it must spend its force before it can be stopped." The deliveries for first and second quarters are so well booked that only the second half of the year is available for active demand, and for that delivery the majority of the orders are now booked. The export demand has been of the same nature as the domestic trade—very active and for deliveries agreeable to sellers. A high authority said to the writer: "Since we entered the export trade I have never seen the foreign buyers so eager for our Iron as they are now, and if we were inclined to do it we could place with them an amount equal to our output. As it is, we have placed all we care to at present, and will do some figuring on probabilities before renewing activity." In warrants there was small trading, some small amount changing hands at $8, but the movement is light. Stocks in Alabama and Georgia on February 1 amounted to 19,000 tons in furnace yards. Three-fourths of this was at Birmingham. The report March 1 will show a big hole in even this small stock.

The weather has been against the consideration of anything but personal comfort, and we can chronicle nothing new in the way of industrial enterprises. Those being inaugurated at Ensley are moving along without friction and making headway as fast as weather permits. At the rolling mills they report an active demand and at advance established. The committee appointed to formulate a plan have not yet reported, but they are actively at work now upon it.

The minor industries all show continued activity. The Hardie-Tynes Machine Company report fine orders for Corliss engines from Texas and also good contracts in connection with the new dredges to be built at Norfolk. The Birmingham Machine & Foundry Company are figuring on an important line of work. The Birmingham Boiler Works have a shop full of orders, and these but index the general condition of things in this branch of industrial affairs.

In real estate, while there is no active trading, it takes very little inquiry to stiffen rates. The Elyton Company are gradually getting on their feet, and there organization scheme is gradually being accepted by stockholders and creditors. Rumor is persistent concerning certain large enterprises to be located at Ensley City, but the secret is being well guarded so far. The Coal situation is as last stated. The day's output is loaded daily on the cars and it goes out to the consumer, but there is a constant cry for Coal and only a half satisfied demand. If our output was doubled a market could be easily found for it.

The Birmingham Foundry & Machine Company have received from the Rod Mill Company the contract for a cross compound engine of 750 horse-power. This illustrates the strides we are making in work of this character, for but a few years back the question of letting this contract here would not have been entertained. There has also been allotted to them the contract for the fly wheels, several in number, and which vary in weight from 160,000 pounds down to 40,000 pounds. There are some other contracts of similar character not yet let but which are being considered, with prospects very fair for being awarded to the same company. The policy of the Rod mill, like that of the Steel mill, is to let all contracts that can be satisfactorily handled here to local industries, and the recent improvements, costing $30,000, added to the Birmingham Foundry & Machine Company, give them every facility for turning out difficult and delicate work.

The Commercial Club announces the closing of a contract with a Michigan party for the erection of a flour mill of 200 barrels daily capacity. To this add the erection at an early date at Ensley by local parties of a large saw mill, a planing mill, a veneer factory and a barrel, keg, tub and bucket factory, all to be owned by one interest. Contracts have been made with railroads for transportation of raw material and these industries are a fixed fact. But for the interference of the bad weather with negotiations other contracts for industries would by this time have reached successful conclusions. As it is the promises are bright for several large and important enterprises to be secured in the near future.

The Belgian Iron Market.

BRUSSELS, January 27, 1899.—The situation of the Belgian metallurgical industry has been generally excellent during the year 1898. It should be noted, however, that it has been better for rolled products than for Pig Iron, and that Steel has been favored, too, compared with Rolled Iron. The production of Pig Iron has somewhat diminished, when compared with 1897, and exports have increased only lightly. The home consumption, however, has developed notably and prices have been higher than in 1897. The mills, however, complain vigorously against the maintenance on the part of the State railroads of freight rates altogether too high on Coal, on Ore and on Finished products for export. There has been adverse criticism, too, concerning the absence of Belgian banks in Oriental countries, and to the inadequate national merchant marine, which have contributed to restrain the export of the metallurgical industry in Belgium, whose equipment is up to the latest developments, whose engineers are capable and whose workmen are the best, perhaps, in the world. The industry has also for many long years, and always in vain, insisted upon the passage of a law relative to the concessions for mineral deposits, which are still numerous in Belgium, although in the absence of a law they cannot be practically exploited. The Iron makers also desire to see the State railroads replace the wooden ties, which must be bought abroad, by metallic Ties. There, too, they meet the adverse decision of the Minister, who rather purchases abroad than at home, as is shown by

the recent acquisitions in France and in England of passenger cars, locomotives and boats.

To these causes must be added the fact that prices for Coke and for Coals have risen, and that labor demands higher wages. If it may be said in a general way that the year 1898 has been a good one for the Belgian metallurgical industry, it may be asserted also that it closes in an altogether excellent manner. December has brought very abundant orders, and prices show a rising tendency, although usually at this period there is a falling off and the markets are heavy. This encourages the hope that there will be a fine rising movement in 1899. Until now these expectations have not alone been realized, but they have been surpassed.

To begin with it may be well to compare the figures relative to production and export, which have been as follows:

Production of Pig Iron.

	1897.—Tons.	1898.—Tons.
Mill Iron	426,332	302,975
Foundry Iron	78,410	89,575
Steel Iron	517,659	590,198
Totals	1,022,401	982,748

While our production has therefore declined 39,653 tons from 1897 to 1898, the export has increased from 10,381 in 1897 to 16,557 in 1898. During the same time the imports have developed from 288,956 tons in 1897 to 317,869 tons in 1898, an increase of 28,913 tons. There is, therefore, a falling off in apparent consumption of 16,916 tons. So far as the imports of American Pig Iron into Belgium were concerned they fell off from 1897, when they were 14,766 tons to 7249 tons in 1898. In December a recovery took place, the importations of that month having been 2325 tons.

The Belgian blast furnaces have sold their entire product for 1899, and there is absolutely nothing available in Luxemburg and in the East of France, which are usually our principal sources of supply. Prices of Pig Iron are rising steadily.

The exports of Iron and Steel from Belgium during the last two years have been as follows:

	1898	1897.
Pig Iron	16,557	10,381
Castings	26,842	32,173
Old Material	22,350	17,590
Wrought Iron:		
Wire	1,530	2,751
Beams	65,746	62,861
Rails	1,040	1,683
Sheets	68,271	63,195
Various Rolled Products	239,687	226,032
Forge Irons	47,129	39,465
Galvanized Iron	1,752	1,407
Tin Plate	1,430	1,191
Total Iron products	426,535	398,585
Steel:		
Ingots	.....	1,161
Blooms and Billets	121	40
Wire	3,493	2,224
Beams	56,936	5,489
Rails	81,261	90,487
Sheets	1,169	7,986
Various Rolled Products	23,945	28,599
Steel Forgings	24,424	29,774
Total Steel	202,146	214,360

It will be observed that the increase has not been considerable, but the Belgian Iron makers exult over the fact that their results compare favorably with those of Great Britain, which has seen its exports decline heavily during the year 1898.

At the present time the blast furnaces occupy the best position. During the year the advance has been 5 francs per ton on Mill Iron, 5 francs on Foundry Iron and 3 on Basic Pig. The furnaces have their whole output for 1899 taken at the highest prices. On the other hand, they have covered their requirements for the whole year at 18 francs instead of 19 francs paid in 1898. Several new blast furnaces are under construction, and old stacks will be started which were considered out permanently.

So far as the rolling mills are concerned, the Belgian plants work up important quantities of Steel, which they must buy from Steel works. Prices are now 112.50 francs for Blooms and 125 francs for Billets, and yet there is little available at these prices in Europe. This scarcity is so great that it is predicted that there will be a very considerable increase in the production of Wrought Iron during 1899, as compared with Steel. Attention to this fact should be specially directed to the American Steel works. It is possible that they may send their Steel to Belgium.

So far as the orders for Finished Iron and Steel are concerned they are becoming more and more numerous for export, and for domestic consumption. The Foundries, the Bolt and Nut works and the Structural shops are constantly increasing their requirements; therefore the rolling mills, expecting a further advance in prices, decline to commit themselves for future delivery, and will only enter contracts for immediate delivery. As yesterday a newspaper at Antwerp said, "The age of Iron seems to have become the age of gold." Unfortunately a rise in Coal is expected for the new settlements of future contracts which is expected on April 1. In view of the fact that the Glass industry is going through a crisis and that the domestic consumption has been light, such an advance to the Iron industry does not seem justified.

New York.

Office of *The Iron Age*, 232-238 William street, New York, February 21, 1899.

Pig Iron.—There has been quite an active market at advancing prices, and while the majority of consumers have covered up to July delivery and beyond, buyers are still making their appearance. There is a disposition, too, to study the question of covering the second half of the year partly or wholly, but we have not learned that much has yet been done in that direction. We quote as follows: Lehigh and Schuylkill Irons, No. 1 Foundry, $13 to $13.25; No. 2 X, $12 to $12.25; No. 2 Soft, $11.75 to $12; No. 2 Plain, $11.75, and Gray Forge, $11.25 to $11.50. Southern brands are quoted: No. 1 Foundry, $13 to $13.25; No. 2 Foundry, $12.75 to $13; No. 1 Soft, $13 to $13.25; No. 2, $12.75 to $13, and Gray Forge, $11.75 to $12.

Cast Iron Pipe.—There have been a number of sales during the past week, including the lot of 1900 tons for Worcester, taken at a low figure, about 1000 to the Metropolitan Company and other lots. As yet the situation has not been clearly defined so far as the attitude of the consolidation and the outsiders are concerned. Among the fresh orders now in the market is a lot of 2500 tons of 36-inch Pipe for Washington, D. C., to be let on March 11.

Steel Rails.—There have been some round sales of Steel Rails at $21, and now the Eastern mills have advanced their prices to $22. Unless the European markets rise correspondingly the point has now been reached where exports will be cut off, unless special concessions be made. There is one order for 12,000 tons for China in the market. The recent business in Girder Rails has been moderate.

Track Fastenings.—We quote: Angle Bars, 1.15c. to 1.20c.; Spikes, 1.50c. to 1.55c., and Bolts and Nuts, 1.75c. to 1.80c.

Finished Iron and Steel.—The building of the towers and shore spans of the new East River bridge has been awarded to the New Jersey Steel & Iron Company. The material involved includes about 7000 tons of Plates and about 5000 tons of Shapes. The requirement that the Steel be made by the Pig and Ore process and Open Hearth Steel narrowed down the bidding and entails a larger expenditure. We understood that a Pittsburgh mill making Plates from such Steel quoted 2.5c. per pound to bidding contractors. A good deal of work is coming up locally, but the only thing closed this week is the material, about 1000 tons, for a building at 125th street and Park avenue. Prices continue to advance in sympathy with primary markets. It is intimated that the advance in raw materials may soon lead to an upward tendency on Beams, which have not moved thus far to any appreciable extent. Hoops are still low under sharp competition. We quote as follows: Beams, 1.45c. to 1.55c.; Angles, 1.35c. to 1.40c.; Universal Mill Plates, 1.60c.; Tees, 1.50c. to 1.55c.; Channels, 1.40c. to 1.50c.; Steel Plates are 1.60c. to 1.70c. for Tank, 1.70c. to 1.75c. for Shell, 1.80c. to 1.90c. for Flange, 1.90c. to 2c. for Fire Box, and 2.25c. to 2.50c. for Locomotive Fire Box, on dock. Charcoal Plates are 2.25c. for Shell, 2.75c. for Flange, and ½c. advance for Fire Box quality. Refined Bars are 1.20c. to 1.25c., and Common Bars are 1.12½c. to 1.15c., on dock. Soft Steel Bars, 1.20c. to 1.25c.; Steel Axles, 1.45c. to 1.50c.; Scrap Axles, 1.60c. to 1.70c.; Links and Pins, 1.50c. to 1.60c.; Hoops, 1.15c. to 1.20c.; Best Iron Boiler Rivets, 2.25c. to 2.50c., delivered; Steel Structural Rivets, 1.75c. to 1.85c.; Cotton Ties, 55c. to 65c. per bundle at mill.

The New York Machinery Market.

Office of *The Iron Age*, 232-238 William street, New York, February 21, 1899.

Machinery merchants are busy; busier than they have been at any time for several moons back. Freights are commencing to move, mails are regular, and everything that was held up by the holiday-blizzard combination of last week has been turned loose. The mails during the last few days have deluged the Liberty street district with inquiries and orders. Many of these have been held over on account of the inconveniences of a week ago, but all show very plainly that manufacturers throughout the country are exceedingly busy and are anxious to equip their plants as far as possible to meet a continuance, if not an increase, in the healthy state of affairs. The prices of raw materials continue high and machinery builders are trying hard to get at least a proportionate advance in the price of their product.

It is very difficult to obtain large tools. One of the largest transactions made in this market this year was partly consummated last week. The Ingersoll-Sergeant Drill Company, whose plant is at Easton, Pa., purchased a portion of the machinery which they will install in an extension to their works. We understand that the entire list calls for about $60,000 worth of machine tools. About half of this amount, we understand, has been ordered. It is said that this was divided principally between the Niles Tool Works Company, the Pond Machine Tool Company, and Manning, Maxwell & Moore. The tools which remain to be ordered are of types which are made by several builders and will be awarded on competitive bids. The work is being handled by the company's superintendent at Easton.

Chief Engineer Willets submitted a detailed report to the Navy Department of the cost of a new equipment of tools for the machie shop which is to replace the one destroyed by fire at the Brooklyn Navy Yard. Mr. Willets, it is said, found that practically nothing had been saved from the fire of last Thursday night, and that a complete new outfit will be necessary. His estimate of the total cost of this equipment is $758,000. The large tools which were ordered last summer were not caught in the fire, as they were installed in the erecting shop. The tools which were lost were of a smaller nature, some of them new, but the majority rather antiquated. They consisted mainly of lathes, drill presses, milling machine shapers, small planers, screw machines, and similar tools used in general machine work. Mordecai T. Endicott, Chief of the Bureau of Yards and Docks, and Engineer-in-Chief Melville of the Navy Department were in New York yesterday, looking over the grounds at the Navy Yard preparatory to the laying out of a new machine shop and the formulation of plans. Everything is being done to rush the erection and equipment of the new shop.

Fire destroyed the main buildings of the Manhattan Brass Company, 334 East Twenty-eighth street, New York. The estimated loss is $250,000. The company are now purchasing as much machinery as they can possibly crowd into that portion of their plant which remained intact. Specifications for a complete new plant we understand are being drawn up, but this work must necessarily await the action of the insurance adjusters. Machinery men in this city are following the job up closely and anticipate good orders in the near future.

It is reported that additions will be made to the plant of Flather & Co. of Nashua, N. H. Negotiations are said to be under way for the purchase or occupancy of the plant formerly used by the Bates Mfg. Company of Nashua, to be used by Flather & Co. as an auxiliary foundry.

The Otis Elevator Company have been on the market for a quantity of new tools to be installed in their works at Yonkers. We understand that the tools needed are of a type which either has been or will be supplied by Wm. Sellers & Co. of Philadelphia.

There has been a report afloat to the effect that the prices in boilers had been advanced materially within the last few days. We learn that there has been no concerted movement among boiler builders for an increase, although prices have naturally advanced somewhat on account of the high price of materials. The only announcement of an advance in water tube boilers was made by the Cahall Sales Department. This advance is to take place on March 1, and is to amount to 20 per cent. Other builders either announced their intention to advance prices or stated that a slight increase had been made, but the greatest increase mentioned was 5 or 10 per cent. It was universally denied that any movement was on foot toward an agreement to increase prices. Small tubular boilers, we understand, have also been advanced about in proportion to the increase in materials.

It is stated that the outcome of a meeting held at Muncie, Ind., is a favorable feeling among manufacturers of Malleable Iron to form an agreement for the regulation of prices. The definite action of those present at the meeting is kept secret. Among those said to have been present are Amos, Burt H. and E. J. Whiteley of the Whiteley Malleable Castings Company of Muncie, Ind.; J. C. Bradley of Buffalo, George Rawlings of Pittsburgh, R. H. Freese of Walkerville, Ont.; I. P. and George Metcalf of Erie, T. P. and V. T. Hanmer of Bradford, D. D. Griffith of Chicago, E. S. Mason of Beaver Dam, Wis.; F. E. Nulson of St. Louis, R. C. Oliphant of Trenton, Charles Herron of Chattanooga, John A. Penton of Detroit, and A. R. Ludlow of Springfield, Ohio.

Owing to the scarcity of Ceylon graphite the price of steel crucibles, foundry facings and everything with plumbago as a component part has advanced considerably. Prices in these lines are now higher than they ever were, and the few merchants handling them have sent notifications to the trade of the advance from time to time during the last eight months. At present prices are at least 100 per cent. higher and in some grades almost 300 per cent. advance has been made. The advance has been more marked in the higher grades, the highest grade having advanced most. The natives of Ceylon, who mine and export the graphite, are in a very strong position and the unfavorable weather conditions have strengthened their independence. There is apparently no immediate let up in sight.

Construction Notes.

We are informed by the Garry Iron & Steel Roofing Company of Cleveland, Ohio, that they have recently suffered a $50,000 fire. It is expected to rebuild the plant immediately.

Lewinson & Just of 128 West Forty-second street were awarded the contract for the structural and ornamental iron work for the ice plant which is to be built in connection with the Jacob Ruppert Brewery of this city. The building will be 200 x 202 feet, four stories high, and there will be about 6000 tons of iron and steel work.

The Riter & Conley Mfg. Company of 26 Cortlandt street and Pittsburgh recently received the contract for the buildings for the new plant to be built by the Pressed Steel Car Company.

Bids will be asked to-day for the erection of buildings for the exposition of manufactured goods, to be held in Philadelphia next September, October and November, under the auspices of the Philadelphia Commercial Museums and Franklin Institute.

The Western Gas Construction Company of Fort Wayne, Ind., are said to be installing new machinery, including steam hammers, steam shears, punch presses and lathes. An addition is being built to the works.

It is reported that work on the $400,000 pipe plant, which will be erected near Bessemer, Ala., by the Addyston Pipe & Steel Company of Cincinnati, will be commenced this week. It is also stated that the first castings are anticipated about June next. The capacity of the plant will be 350 tons of pipe daily.

A report from Columbus, Ohio, states that the Dahlonega Consolidated Gold Mining Company are negotiating for the purchase of a 100 stamp mill equipped with the best modern appliances.

The Lee & Osborn Company have been organized in New Haven, Conn., to conduct a machinery business. The stockholders are said to be G. Edward Osborn, Frank T. Lee and Frank C. Bushnell.

A contract for 48 additional furnaces was given to the Dobbie Foundry & Machine Company by the Union Carbide Company of Niagara Falls. The Berlin Iron Bridge Company received a contract for additional buildings.

It is stated that work has commenced on the central electric power station which Armour & Co. are adding to their Chicago plant at the Union Stock Yards. The building will be 200 x 200 feet, one story, with a hight of 70 feet. It will cost $750,000. When the work is completed the machinery of the entire plant will be electrically driven.

The Lehigh Valley Railroad is said to be considering bids on foundry work in connection with the Mauch Chunk shops. The company proposes to let the work out on contract. Mauch Chunk citizens are considering the erection of a local foundry to keep the work in the city.

Reports from Ansonia, Conn., state that M. Hemingway & Sons, silk manufacturers of Watertown, Conn., have just purchased a tract of land in Ansonia, where the company propose to erect a large branch factory.

The entire Hoover mills of Morristown, Pa., consisting of a steel plant, blast furnace and pipe mill, formerly operated by James Hoover, were sold to C. A. Baird & Co. of Philadelphia last week for $19,500. The plant was purchased as old scrap. It has been said that the original cost of the plant was $500,000.

The pattern shop of the Avonmore Foundry & Machine Company of Greensburg, Pa., was completely destroyed by fire last week. The structure will be rebuilt at once and new equipment purchased.

The Fort Pitt Bridge Company of Cannonsburg, Pa., were awarded the contract for the construction of the addition to the works of the Tyler Tube & Pipe Company of Washington, Pa.

Richard W. Round of Traverse City, Mich., will erect a foundry and iron works at Traverse City.

It is rumored that the Union Car Company will build a plant either at Depew, N. Y., or Pittsburgh, for the purpose of building steel trucks for freight cars. The report could not be confirmed.

The plant of the Gree Machinery Company of Knoxville, Tenn., was burned. Loss about $75,000.

Fire destroyed the Quakertown Stove Foundry, according to reports from Doylestown, Pa., involving a loss of $75,000.

It is said that the hydraulic shop of the Phœnix Iron Works of Phœnixville, Pa., collapsed under the weight of snow and a large amount of machinery was destroyed.

Bridges.

It was recently ordered by the City Council of Des Moines, Iowa, that the city engineer prepare plans and specifications for three new bridges, but it is discovered that the engineer has but $350 at his disposal till the end of the fiscal year. Another good reason why the demand of the Council is an impossibility is the fact that, estimating the cost of the two steel bridges at $40,000 each, and the Milan bridge at $100,000, the bridge architect would be entitled to a fee of $3600, being 2 per cent. on the cost; and, again, owing to a recent Supreme Court decision the work cannot be done now and paid out of next year's appropriation, and a new appropriation cannot be secured until April 1.

The Union Pacific Railway and the Union Stock Yards at Omaha are to build a viaduct or tunnel at N street.

The County Commissioners, at Sioux Falls, S. D., awarded J. M. Hewitt of Minneapolis the contract to build all the bridges of the year that are more than 100 feet in length, and to Frank Foster of Sioux Falls, all bridges under 100 feet.

At Minneapolis petitions are being concluded for the widening of Washington avenue bridge, the improvement to cost about $40,000.

The Southern Railway bridge across the St. James River, at Richmond, Va., is in great danger of being washed away by the floods.

The D. L. & W. Railway have decided to replace their bridge over the Susquehanna, at Wilkes-Barre Junction, Pa., with a steel structure.

The contract for building the Blissville Bridge (Brooklyn) has been awarded to the Degnan-McClaine Construction Company at $57,414. The other bidders were Gildersleeve & Rolfe, $61,851, and Frank R. Pidgeon, $73,610.

The Common Council of Minneapolis are at a deadlock on the question of advertising for bids for the new bridge. Chairman Lane and Alderman Leighton advocate advertising, while Aldermen Anderson and Sibley are opposed to the work being done by contract.

Binghamton, N. Y., has awarded the contract for a bridge, to cost $40,000, to the Groton Bridge Company.

The Terminal Railway Association of St. Louis has been directed by the city to erect a $150,000 bridge at the Union Station. Mr. Walsh, president of the association, is opposed to the project, and will advocate that the directors refuse and carry the question into the courts.

The Wagner Bridge Company, which have the contract to build the Rock River Bridge, at Moline, Ill., now claim that the advance in the price of steel will not permit of building the bridge for the $25,000 bid. They want an additional $1000.

On March 1 the Bridge Commissioners of Gallatin, Ohio, will advertise for bids for a bridge across Indian Branch; and one across Bear Branch in Monroe township.

At Boise, Idaho, a bill has been introduced, appropriating $500, to assist in the construction of a bridge across Snake River, between Minidoka and Oakley; also a bill appropriating $10,000 to build an iron bridge across Snake River in Bannock County. Both bills are reported back to the Committee on Highways, Bridges and Ferries without recommendation.

A bill was passed in the Albany, N. Y., Assembly, authorizing Syracuse to levy a tax of $10,000 for the construction of a steel girder bridge over the Onondaga Creek.

The Osgood Bridge Company of Albany, N. Y., have been awarded the contract for the machinery for a new State dredge, to cost $6120.

Plans for a new bridge, at the Rensselaer, N. Y., railway station, have been made, but there is prospect of a change to permit of a carriage way. A petition will be presented, asking Mayor Lansing to appoint a committee to wait on the officials of the Hudson Bridge Company, and ask them to provide for a carriage way.

The Twelfth Ward Public Improvement Association of Hoboken, N. J., has in hand a boulevard scheme of considerable proportions, which, if carried out, will require some bridge construction. Geo. Hoehe is president of the association and Chief Engineer Harrison has the plans.

The Hudson County (N. J.) members of the County Board of Chosen Freeholders want to build a new iron bridge to replace the Paterson Plankroad Bridge, crossing the Hackensack River, near Secaucus, but the Bergen County members oppose the outlay, which would be about $150,000. A portion of this cost would have to be paid by the Hoboken & Rutherford Trolley Line.

The Amherst-Northampton (Mass.) Bridge scheme has been abandoned, and the electric railway company will build their own bridge.

Senator Elkins (West Virginia) has introduced a bill in the United States Senate, authorizing the County Court of Monongalia County to build a bridge at Morgantown, W. Va.

At Des Moines, Iowa, an ordinance was passed directing the City Engineer to prepare within 30 days plans for two new Milan arch bridges, costing from $100,000 to $150,000 each.

The Chicago, Rock Island & Pacific Railway Company will replace some wooden bridges with steel, between Iowa City and West Liberty, Iowa.

The Philadelphia Machinery Market.

Office of *The Iron Age*, Forrest Building,
PHILADELPHIA, PA., February 20, 1899.

Apart from the suspension of business necessitated by the recent severe storm, and which of course checked the volume of trade, little change is noticed in this market. Orders are plentiful, inquiries voluminous and the prospect for a continuation of this condition for a prolonged period approaching a certainty. Business appears already to be as large in volume as was the case in 1892, the banner year with the majority of concerns in the trade. As compared with last month, the month now closing shows no falling off in the booking of orders. The home demand is noticeably better, but as the foreign bookings have not been so heavy the aggregation of business continues about as last reported. There is no slackening of the demand from abroad, but the smaller number of bookings is due to the fact that delivery requirements cannot in many cases be met.

This condition is, however, confined to the output of machine tools. Engine builders, boiler makers and makers of power equipments seem to be making fairly prompt deliveries. On a specification recently sent out to many prominent builders covering some engines of large size the bids received were not indicative of unduly crowded shops. The quickest delivery quoted was 30 days and the longest 60 days. As the engines were not of a design that could be carried in stock it is evident that for the present buyers can get satisfactory deliveries.

Owing to the large demand for machine tools builders are getting better prices and the quotations made are firm. The prices of a year or so ago are largely tendered by buyers who were then in the market and failed to cover for their requirements, but orders on these tenders are almost without exception turned down. On standard tools the advance in prices is not large, and prices in general are still away below those obtainable prior to the recent depression. A little margin of extra profit is now secured through a saving effected in building costs. In the dull times a batch of perhaps three standard or staple machine tools built at one time was considered a good stock covering. Now 12 to 20 machines comprise a batch, and the number would be still greater if floor space in the shop was available. The larger the number of machines of one kind going through at one time the cheaper they can be built, and the saving thus effected is of course a source of profit to the builders.

About the only branch of the machinery trade in this market not in good shape is that covering textile machinery. The demand for this class of machinery is exceedingly small, and there seems to be little in the outlook to warrant a belief that an improvement is near at hand. Mills are not adding to their equipments, and there is practically nothing doing in the way of re-equipment.

Bement, Miles & Co. continue exceedingly busy at their works. Every department is being run to its utmost extent and every endeavor made to expedite deliveries. Probably the greatest pressure at the works is encountered in the heavy tool department, which has a very large amount of business to take care of.

The works of Wm. Sellers & Co., Incorporated, are also very busy in all departments on foreign and domestic orders. Their crane department is full of work, but orders for common requirements are being fulfilled with reasonable promptness. Among the orders in course of completion in this department is one from India for some cranes of good size.

There is plenty of activity at the Harrison Safety Boiler Works. They are meeting a nice demand for their specialties and are filling orders fairly promptly. Among the recent sales of Cochrane feed water heaters and purifiers they mention: Howe, Brown & Co., Pittsburgh, Pa., 600 horse-power; Geo. J. Phillips, Chicago, 150 horse-power, special; Pittsburgh Plate Glass Company, Tarentum, Pa., 1750 horse-power; Richard Heckscher & Sons, Swedeland, Pa., 1750 horse-power; Brown & Bailey, Philadelphia, 125 horse-power; Allen Dyeing Company, Philadelphia, 150 horse-power; Ajax Forge Company, Chicago, 300 horse-power, special; Midland Chemical Company, Midland, Mich., 200 horse-power, special; Enery-Bird-Thayer Dry Goods Company, Kansas City, Mo., 600 horse-power, special. Recent sales of Cochrane separators are also

mentioned, as follows: Glenlyon Dye Works, Saylesville, R. I., two 6-inch; American Blower Company, Christiania, Sweden, one 6-inch; Lorain Steel Company, Lorain, Ohio, one 3-inch receiver; De La Vergne Refrigerating Machine Company, New York, one 5 and one 6 inch; Ammonia Western Brewing Company, Belleville, Ill., one 4-inch; Frazer & Chalmers, Chicago, one 8-inch; the Q. & C. Company, Chicago, one 4-inch; Parke & Lacy Company, San Francisco, Cal., one 3½-inch, one 4-inch; Allen Dyeing Company, Webster, Mass., one 5-inch; Boston Elevated Railway Company, Boston, three 24-inch.

Israel H. Johnson, Jr., & Co. continue very busy. They have met an excellent demand during the month for their well known make of lathes. The demand has been chiefly for lathes of medium sizes. Among the larger orders booked is one from the Williams Tool Company, Youngstown, Ohio, for a 42-inch lathe 24 feet long.

E. Harrington Son & Co., builders of lathes, drill presses and hoists, have a lot of work in hand at their works. Their hoist department is particularly busy and bids fair to be for some time to come.

Thos. H. Dallett & Co., makers of portable drills, electric motors and electrically driven tools, report business very good with them. They are getting a good many orders for the portable electric drill recently brought out by them and for other of their portable tools.

The Geo. V. Cresson Company, builders of power transmission machinery, are running their works at their full capacity. They have recently gone into the building of special machinery for cement works, mines and other industries. Among orders lately received they mention one from the Toronto Carpet Mfg. Company, Limited, Toronto, Canada, for a large vertical shaft; another from the Dillon & Griswold Wire Company, Sterling, Ill., for a lot of shafting; an order for shafting from Mexico, and one from the Lehigh Portland Cement Company, Ormrod, Pa., for a 36-inch cement mill.

The Eynon-Evans Mfg. Company are meeting quite a demand for their steam specialties and are busy in all of their departments. They are turning out a lot of jet blowers for use on gas producers, which are designed to greatly increase the efficiency of the producers. They report a good demand for the Eynon-Korting injectors, and are making prompt shipments.

The Philadelphia Roll & Machine Company, builders of sand and chilled rolls, plate straightening machines, tin plate mills and other machinery, report a state of activity in their line. They are building a 1-ton capacity equipment for making steel castings by the Tropenas process for the Longview Kelly Plow Mfg. Company, Longview, Texas, and a similar plant of 2-ton capacity for the Milwaukee Steel Castings Company.

The Hess Machine Works are getting ready for foreign shipment several of their file making outfits. The firm are kept pretty busy on this class of machinery, the demand for which is mostly from abroad.

Lucas and Gliem, builders of cold saws, milling machines, &c., are booking some nice orders at their works, and are quite busy. Among their orders in hand they mention one from the Pencoyd Iron Works, Philadelphia, for a large cold saw and a saw grinder; another from the Frankford Steel Company, Ellwood City, Pa., for a cold saw and a grinder; another from Roach's Shipyard, Chester, Pa., for a saw grinder, and another from Gould & Eberhardt, Newark, N. J., for a cold saw and a saw grinder.

The Pedrick & Ayer Company are quite busy. They are getting some good orders for pneumatic riveting machines, air compressors and pneumatic appliances and are making prompt shipments.

The American Pulley Company report a satisfactory demand for their steel split pulleys. Quite a number of these pulleys are being shipped abroad. They are continually adding new sizes to their line and are able to take care of all ordinary requirements.

The Detrick & Harvey Machine Company are about to erect a new steel building, 100 x 70 feet, to be used as a machine and erecting shop. They will make part of the equipment themselves and are in the market for the balance, including a traveling crane. They are very busy and are running their present works to the full extent of their capacity. They are shipping quite a lot of bolt and nut machinery to England, and horizontal drills and open side planers also to that country and other parts of Europe. They also have several foreign orders in hand for nut facers. They have a large number of orders on their books for open side planers. Recent orders are reported from the Lorain Steel Company, Johnstown, Pa., for two 60-inch planers; Brown & Sharpe Mfg. Company, Providence, R. I., one 42-inch planer, and the Union Iron Works, San Francisco, a ninth order for planers. Among other orders for planers completed and in course of completion they mention orders from the Southern Pacific Railroad, Sacramento, Cal.; Kutztown Foundry & Machine Company, Kutztown, Pa.; Pennsylvania Steel Company, Washington Navy Yard and York (Pa.) Safe & Lock Company.

At the Baldwin Locomotive Works there is increased activity, but engagements are being met with reasonable promptitude and orders are being well taken care of. They have just secured an order from the Chinese Eastern Railway for 71 locomotives, probably the largest order ever received by any one locomotive building concern at one time. The locomotives are of the consolidated freight pattern, with Vauclain compound cylinders, duplicates of the locomotives furnished on an order for 50 from the same road given last year. Forty of these locomotives are to be delivered this year and the balance early next year. The domestic demand for locomotives is exceedingly good. It is estimated that orders for upward of 200 locomotives are to be placed by American railroads within the next few weeks. Bids have already been received on most of this number, and specifications are out or in preparation covering the remainder. The works have also received an additional order from the Midland Railway Company of England for ten more locomotives. Apropos of the placing of orders by this road with American manufacturers Sir Geo. E. Paget, chairman of the Board of Directors of the Midland Railway Company, is reported to have said last week in an address to the shareholders of the company that the company had ordered 170 locomotives from English makers in December, 1897, but not one of them was yet delivered. And when the company were ready in December, 1898, to give an additional order, they could not get a promise that one engine would be delivered in 15 months; therefore it was determined to ask tenders from the Baldwin Company and another company in Connecticut. Tenders, he said, were duly received, and in one instance the delivery of ten engines was promised in ten weeks from the time the drawings were received, and in another instance shipment was promised in four months. He said further 'that he did not think the shareholders would require any further justification of the directors' actions, and that as a matter of fact the order to one of the American firms had been doubled. The second order is the one just mentioned.

The Wilbraham-Baker Blower Company, builders of blowers and exhausters for foundries, smelting works and gas plants, are very busy. They have just received three orders for several large blowers for smelting works in Australia and already have them under way. Recent orders booked include one from the Semet-Solvay Company, Ensley, Ala., for five large exhausters; another from the Norfolk Navy Yard for a large blower; another from George Westinghouse, Pittsburgh, Pa., for a large exhauster; one from the Newport News Iron & Brass Foundry Company for a large blower, and one from David S. Cresswell, Eagle Iron Foundry, Philadelphia, Pa., for a foundry blower.

Carnegie Will Not Build Steel Cars.

PITTSBURGH, PA., February 21, 1899.—Last week an agreement was concluded in New York between officials of the Carnegie Steel Car Company, Limited, and the Pressed Steel Car Company by which the Carnegie Company abandon their intention of going into the manufacture of steel cars on an extensive scale at Homestead, in consideration of the Pressed Steel Car Company purchasing from them all the plates, shapes and axles they will need in the manufacture of steel cars for a period of ten years, the Carnegie Company keeping out of the steel car business while the agreement is in force. This deal has been under way for some time, but was formally ratified last Friday in New York. It is one of the most extensive negotiations that has been made for a long time, and assures to the Carnegie Steel Company a market for much of the product of the new plate mills they are now building at Homestead. At the present time the Pressed Steel Car Company are building about 30 steel cars per day, and as they require about 12 tons each of plates and shapes exclusive of axles and wheels it will be seen that the consumption of plates by the Presed Steel Car Company at present is nearly 400 tons per day, and when the new works are built, giving the Pressed Steel Car Company an output of about 75 cars a day, their consumption of plates will range from 900 to 1000 tons. The orders for steel cars already entered by the Carnegie Steel Company, one of which was for 2000 cars for the Baltimore & Ohio Railroad, have been turned over to the Pressed Steel Car Company, and will be filled by them.

The Pressed Steel Car Company have not as yet selected a site for their new plant, but a selection will be made in a day or two. However, the contract for the buildings has been placed with the Riter & Conley

QUOTATIONS OF IRON STOCKS DURING THE WEEK ENDING FEBRUARY 22, 1899.

	Sales.	Thursday.	Friday.	Saturday.	Monday.	Tuesday.	Wednesday.
Am. S. & W., Common,	83,440	48¼-48¾	48¼-49⅛	48⅝-49¼	48¼-49⅝	49 -51⅛	.....
Am. S. & W., Pref.	16,507	93⅞-94½	93⅛-94¼	93½-94	93⅝-94	94 -95½	.....
Col. Fuel and Iron	4,670	32⅞-33½	33¾-34¼	34⅛-34⅛	34⅞-34½	33⅜-34⅛	.....
Federal Steel, Common	95,712	48⅛-51¼	50¾-52⅛	50⅝-52	51 -51¾	51⅛-52	.....
Federal Steel, Prefer	63,935	86⅝-88⅜	87⅜-88¾	87¾-88¼	88⅛-89	87⅜-88¾	.....
Tennessee Coal and Iron	30,615	42½-43⅛	42⅝-43½	43 -43⅝	43¼-44⅝	44⅜-45⅞	.....
Cambria Iron, Phila*	135	-45¼	45¼-45½	45 -45½	.....	.....	.....
Cambria, Scrip**	.....	.....	.....	.....	.....	.....	.....
Cambria, Steel***	23,639	16¼-16½	16⅝-16⅝	16⅝-16¾	16⅝-17⅞	.....	.....
Penna. Common, Phila	195	-29½	.....	.....	30 -32	.....	.....
Penna. Prefer., Phila	.....	.....	.....	.....	.....	.....	.....
Tin Plate Com., Chic	12,544	37¼-39	37 -38½	37 -38	38 -39	38⅝-39	.....
Tin Plate Prefer., Chic	5,809	90¼-94	91⅝-92½	91½-92	92 -92¼	91⅜-92¼	.....
Tin Plate Common, New York	5,955	37½-39½	37½-38¼	37⅝-37⅞	38 -39	39 -40	.....
Tin Plate Preferred, New York	1,770	.....	-93	-93	-93	92¾-93	.....

* Par $50 ** Par $100. *** $1.50 per share paid in. Late Philadelphia and Chicago sales by telegraph.

Mfg. Company of Pittsburgh. Most of the equipment has also been placed, and work on the construction of the plant, as soon as the site is selected, will be pushed as fast as possible. Within six months it is expected the Pressed Steel Car Company will be turning out fully 75 steel cars per day.

Metal Market.

Office of *The Iron Age*, 232-238 William street, New York, February 21, 1899

Pig Tin.—Only 35 tons of the metal arrived in New York during the last week and about 100 tons covered the arrivals in the out ports. In consequence of this spot Tin has become very scarce again and advances were again in order. Prices crept up steadily and closed to-day at 24½c. The London market fluctuated considerably, declining to £104 17s. 6d., and closing to-day £107 5s. for spot and £106 15s. for three months' futures. The discount on futures has worked down to 10 shillings from over £2 of last week. This shows less disposition to sell for future delivery.

Copper.—The market here is very quiet. There was practically nothing done during the last week and Lake has gone a shade easier. It seems to be generally taken that nothing can be purchased before next March and no sales from first hands have come to our notice. We quote: Lake, 17.90c. to 18c.; Electrolytic Cakes, Wire Bars and Ingots, 17½c. to 17¾c.; Casting, 17c. to 17¼c. London after declining to £71 15s. this morning recovered and closed at £72 for both spot and futures. Exports thus far this month amounted to 4970 tons according to the exchange figures.

Pig Lead—Is quieter and closed to-day 4.40c. to 4.45c. St. Louis telegraphs a steady market, with sales at 4.25c. to 4.27½c. London has declined to £14 2s. 6d. at the close. Reports are current of efforts to consolidate the smelting and desilverizing plants. It is stated that all are in line with the exception of the Guggenheims and Balbachs, who state that they have no intention whatever of joining any combine.

Spelter—Is very strong and still advancing. The market here closed to-day 6.60c., while St. Louis telegraphs 6c. The London quotation at the close was £28. The Ore market took another upward jump and it is said that $50 was bid for the entire output of this month and March.

Articles of incorporation of the Lanyon Zinc Company will be filed at Trenton, N. J., probably to-day. The company will be capitalized at $3,000,000. The new company have purchased the four plants owned by Robert and W. & J. Lanyon. Two of these plants were formerly owned by Robert Lanyon, one being situated at Le Harp and the other at Iola. The two plants sold by W. & J. Lanyon are situated at Iola and Pittsburgh, Kan., respectively. The management of the new company will practically be placed in the hands of W. & J. Lanyon. Robert Lanyon will be a director.

The object of the formation of the new company is said to have been to utilize 40,000 acres of the gas fields which are owned by the Palmer Oil Company. It has been intimated that the Palmer Oil Company are a branch of the Standard Oil Company. This is denied, however, and it is stated that the two companies are competitors. Daniel O'Day, who is vice-president of the traffic department of the Standard Oil Company, owns a block of the stock of the new company, but it is asserted that there are no other Standard Oil men interested. James S. Rodgers of Toledo, who has promoted the scheme here, said in this connection: "The company are purely a local one and have no connection with any but the four Lanyon smelters. There is no intention of forming a trust or combination of wider scope, and Mr. O'Day has taken the stock merely as an investment, and he has it on the strength of personal friendship." The financing of the deal is being conducted by Flower & Co. of this city. Mr. Rodgers stated that owing to the advantages of the abundance of natural gas the new company can smelt $6 per ton cheaper than is done now. This company are the organization referred to from time to time as the "Zinc Trust" which was supposed to be forming.

Antimony.—Hallett's has advanced 10c., while Cookson's remains firm at 10c. to 10¼c.

Nickel—Remains firm and unchanged in price, quotations ranging from 38c. to 40c., according to quantity and delivery.

Tin Plates.—Prices have advanced 25c. per box. This is said to be due to the great scarcity of Steel Bars. The company have as many orders as they can handle. We quote wholesale price J. B. grade American Tins, regular sizes, with usual difference for odd sizes:

	F.o.b. New York.
Bessemer Steel, full weight	$3.81½
Bessemer Steel, 100 lbs	3.69
Bessemer Steel, 95 lbs	3.64
Bessemer Steel, 90 lbs	3.59
Bessemer Steel, 85 lbs	3.54
Bessemer Steel, 80 lbs	3.49
Charcoal Terne, same delivery—	
20 x 28, ordinary	6.34

John Stanton reports the Copper production in the United States and of the foreign reporting mines and United States exports as follows, in gross tons of 2240 pounds:

	Reporting mines.	Outside sources.	Total U. S. product.	Product foreign mines.	U. S. exports.
First half 1895	70,612	9,100	79,712	42,484	34,215
Second half 1895	84,885	6,600	91,485	43,674	30,507
Total 1895	155,497	15,700	171,197	86,178	64,722
First half 1896	94,180	7,200	101,380	42,255	58,216
Second half 1896	95,314	7,200	102,514	43,941	67,287
Total 1896	199,494	14,400	203,894	86,196	125,503
First half 1897	103,651	5,000	108,651	44,263	64,870
Second half 1897	100,555	6,900	107,455	44,007	64,340
Total 1897	204,206	11,900	216,106	88,270	129,210
First half 1898	112,687	7,800	120,487	40,880	68,284
Second half 1898	103,535	10,250	113,785	43,674	76,831
Total, 1898	216,222	18,050	234,272	84,554	145,115
January, 1899	16,774	1,850	18,624	5,852	9,204

Iron and Industrial Stocks.

After a prolonged period of quiet the common stock of the American Steel & Wire Company developed great activity to-day, the sales running up to over 40,000 shares at an advance to 57⅛. Report has it that the earnings of the company are high, and that there is a possibility that the payment of dividends on the common stock may be decided upon to begin in midsummer. The Federal Steel issues varied in activity. Tennessee Coal, Iron & Railroad Company have advanced on the strength of the condition of the iron trade. There have been considerable sales of bonds lately. In tin plate, Chicago leads in volume of business, while New York prices are usually higher.

The following are recent quotations on outside stocks:

International Silver, Common	33½	to	34⅜
International Silver, 5s	..	to	..
Mich.-Peninsular Car, Common	44	to	46
Mich.-Peninsular Car, Preferred	102	to	103
Mich.-Peninsular Car, First 5s	100	to	103
Otis Elevator, Common	39⅞	to	40¼
Otis Elevator, Preferred	90	to	90½
H. R. Worthington, Common		40	
H. R. Worthington, Preferred		104	
Cramp's Shipyard Stock	79	to	80
Pratt & Whitney, Common	3	to	6
Pratt & Whitney, Preferred	40	to	50
E. W. Bliss, Common		133	
E. W. Bliss, Preferred		125	
U. S. Projectile		85	
Barney & Smith Car, Common		22	
Barney & Smith Car, Preferred	..	to	..
Pressed Steel, Common	64⅞	to	65⅛
Pressed Steel, Preferred	87¼	to	87½

The heavy advance in pressed steel issues is due to the arrangement with the Carnegie Steel Company. The location for the new plant is to be decided in a day or two.

Subscription rights to the National Steel Company, which started at a high plane about two weeks since, have not held their own, selling down to 105 at one time. More recently, they have been up to 107.

Poor & Greenough state that the entire issue of the United States Cast Iron Pipe Company has been underwritten.

HARDWARE.

Condition of Trade.

THE past week has been marked by a continuance of the same conditions as have recently prevailed, with a strong tone in the market and an active movement of business. There continues to be an upward trend in the prices of many goods on account of the increased cost of the raw material. The classes of goods in which this advancing tendency is most marked are the following: Those in which Copper or Spelter enter, on which the advances which have been made are steadily maintained; heavy goods, in which the higher prices of Iron make themselves felt, and are manifested in actual advances or a firmer tone; goods made of Wire, in which the much higher prices for Wire have the effect of inducing the withdrawal of quotations on many small articles or the announcement of perceptibly higher quotations. Nearly all lines of Shelf Hardware are more or less affected by the increased cost of the material, but in many cases there not having been as yet any advance in labor, this is not as yet sufficient to necessitate quotable advances. A stronger tone is, however, given to practically all goods, and manufacturers are in many cases withdrawing extreme discounts and special concessions of one kind or another. The hopeful feeling of the trade continues without abatement and manufacturers and dealers alike are getting ready for a prosperous business. In this condition of things the buyers of the large houses find their hands full in keeping track of the changing prices. It is a time when retail merchants should keep in close touch with the market and use their best care in buying.

We give below some reports from our special correspondents which, on acount of the detention of the mails, did not reach us in time for use last week, and also letters from William P. Smith and Charles H. Wier referring to conditions and prospects of trade in the South.

Chicago.

(*By Telegraph.*)

The Shelf Hardware trade continues very active, jobbers report a large gain over February of last year, the percentage being greater than that shown in a comparison of January. Prices continue to advance. Wire products have not changed for a couple of weeks, but almost everything else is moving upward. Tinware is soaring, and the addition of 25 cents per box made this week on Tin Plates will not check its flight. Eave Troughs and Conductor Pipes were advanced on Monday about 15 per cent. House Pumps have gone up 15 to 20 per cent. Jobbers say that following the changes now being made almost keeps them busier than their routine duties.

Boston.

BIGELOW & DOWSE COMPANY.—There is a notable improvement in the Hardware trade of New England that manifests itself in freer buying by the retail dealers. All of the wholesale houses are quite busy, and sales will show a handsome increase over those in January, 1898.

All the mill properties are feeling the increased demand, and generally are running full time, their demands and the demands of their workmen partially fill the "aching void," which has been so long looked for and wished for by the merchants in all branches of trade. Manufacturers' advanced prices are well received and are being maintained.

It seems to be a general opinion that the advances have only commenced, and that the rush of orders and scarcity of raw material will be a factor for further higher prices, and the conditions prevailing will warrant the certainty of prices being maintained by the factories, who will have the support of every one—until they seem to be unreasonable.

The blizzard now upon us may interfere for a little, but the conditions are certain for an increasing and profitable trade for 1899.

Omaha.

LEE-GLASS-ANDREESEN HARDWARE COMPANY.—The unprecedented cold weather that has been experienced throughout the entire Northwestern country during the past two weeks has had its influence in diminishing the volume of business to a certain extent. Considering this drawback, however, trade has been anything but sluggish. The country demand for Hardware and kindred goods continues to be of very satisfactory proportions, and, with the coming of spring, it is expected that trade will open up to proportions much larger even than last year. The market continues in about the same position as indicated in our last report. Advances in prices of manufactured goods, caused by the recent heavy advances in prices of the leading raw materials, have been well sustained. A firm feeling prevails all along the line, and the tendency would appear to indicate a still higher range of values.

From whatever point the situation may be viewed, the most gratifying evidences are apparent, while the prospects for the future are full of promise.

From William P. Smith.

Business is good throughout the South Atlantic States. Particularly is this true of this city (Atlanta). The advances which have recently taken place, particularly in heavy goods, have stimulated buyers to in some instances anticipate their later spring purchases, and this coupled with a good immediate demand has added largely to the volume of orders.

The trade generally look favorably on the recent advances where they have been brought about by the general improvement in business, and a desire to take a step upward from the ruinously low prices which have for some time prevailed, but they look with alarm on consolidations or trusts. One is, they think, a blessing, the other a curse.

From Charles H. Wier.

Trade in the South is active. The jobbers are receiving a large number of orders from their salesmen, who report a brisk demand for Hardware.

The demand embraces a more general line than formerly, which, added to the usual rush of orders for seasonable goods, makes the volume of trade large. From present indications the prospect for a continued active season is good.

The jobbers, in anticipation of a large demand, took advantage of the low prices, and stocked up liberally, and are realizing the benefit of their good judgment.

Notes on Prices.

Wire Nails.—The Wire Nail market during the past week has been decidedly firm, with a fair volume of business. The American Steel & Wire Company, who are in control of the market, are maintaining prices steadily on the basis of $1.60 to the large trade, f.o.b. Pittsburgh or Cleveland, and $1.65 to single carload buyers, with the privilege of straight or mixed cars of Nails and Wire. In less than carload lots an additional 5 cents is charged small buyers. An advance of 10 cents per keg has been made in the export price of Nails. For domestic business no further advance has been announced, but the manufacturers are refusing to accept orders for future delivery and in some cases have withdrawn outstanding quotations. It is the general opinion that a further advance is not unlikely.

New York.—Business in the East has been much interfered with by the heavy snows, but prices continue firm, with some movement of goods. New York prices are as follows: Carload lots on dock, $1.80; small lots from store, $1.85 to $1.90.

Chicago, by Telegraph.—Manufacturers are having a continuance of the good demand reported in previous weeks. The American Steel & Wire Company are behind in shipment from every one of their mills, and the prospects favor a continuance of the heavy pressure for deliveries. They quote carload lots at $1.75, Joliet and DeKalb. A first rate demand is reported from jobbers' stocks. They quote small lots at $1.80.

Pittsburgh.—Nothing of importance developed during the week. We can report a fairly active demand for Wire Nails, some of the larger trade having recently come into the market and made purchases of round lots at established prices. It is unlikely there will be another advance in prices of Wire Nails prior to March 1. We quote for February shipment only as follows: To jobbing trade, $1.60, base, with 2½ cents advance per 100 pounds, less than carloads, direct shipment on contracts; to the single carload buyer, 5 cents advance, or $1.65; less than carload lots to retailer, 10 cents advance over price to jobbers, all f.o.b. cars Pittsburgh or Cleveland. The railroads have postponed the matter of making the minimum weight of carload shipments 30,000 pounds until March 31. Until that date the minimum weight of carload shipments will be 24,000 pounds as heretofore.

Cut Nails.—The Cut Nail market is decidedly firm and prices are firmly maintained on a basis of $1.35 on carload lots, f.o.b. Pittsburgh. By the arrangement between the manufacturers goods are generally sold in Eastern territory with freight to the point of destination added to the above price, the sale being made where feasible at a delivered price.

New York.—The New York market has been without special feature during the week, prices being based on quotations above. The regular price of carload lots on dock is $1.50 and small lots from store are held at $1.60.

Chicago, by Telegraph.—The volume of business in this line is quite uniform, expanding slightly as the demand for Wire Nails expands. Manufacturers have raised the price of carload lots to $1.35 at mill, in consequence of which jobbers have marked small lots up to $1.50, Chicago. The mill price would warrant a still higher rate from stock.

Pittsburgh.—There is a fair demand and the general tone of the market is strong. Prices are unchanged, and we quote Cut Nails at $1.35, base, f.o.b. cars Pittsburgh.

Barb Wire.—During the past week or two there has been an active demand for Barb Wire, and in view of the firmness of the market and the prospect of advances a good many large buyers have covered their requirements. The manufacturers are avoiding the acceptance of orders for future delivery, and in view of their control of the market and the condition of the raw material the trade is anticipating a further advance. Present quotations are as follows: Painted Barb Wire, $1.70; Galvanized, $2.10, f.o.b. Pittsburgh or Cleveland. The above prices are those quoted to the jobbing trade, an advance of 5 cents being made to single carload buyers. To retail purchasers of less than carload lots an additional advance of 5 cents is made. On pony reels, catch weights, an advance of 5 cents is made on the price of full weight reels. The export price has recently been advanced $1 a ton.

New York.—The demand for Barb Wire in this territory has not been very active during the past week, the interference of the snow with business having the effect of diminishing materially the volume of trade. The tone of the market is, of course, steady and strong, and the indications are regarded as promising for an excellent season's business. Quotations remain as before: Carload lots of Four-Point Galvanized, $2.25 to $2.30 on dock, and about $2.40 in small lots from store.

Chicago, by Telegraph.—The demand for Plain and Barb Wire goes hand in hand with that for Wire Nails. The movement of all seems to be at about the same rate. Prices are firm, but show no change from last report. Painted Barb Wire is quoted in carload lots at $1.85, Joliet or De Kalb, while Galvanized stands at $2.25, with Ellwood and Baker Wire 5 cents higher. Staples are held at the same price as Barb Wire. Carload lots of Plain Annealed Wire are $1.60, base, while the extra for Galvanized up to and including No. 14 is 40 cents; Nos. 15 and 16, 60 cents; Nos. 17 and 18, 85 cents. Jobbers ask the usual advance for small lots.

Pittsburgh.—Manufacturers have a large tonnage on their books and the market is very firm. We quote for February shipment: Painted Barb Wire at $1.70; Galvanized Barb Wire, $2.10, f.o.b. cars Pittsburgh or Cleveland. To the jobbing trade, 2½ cents advance per 100 pounds, less than carload lots, direct shipment on contracts; to the single carload buyer, 5 cents advance over the jobbing price; less than carload lots to retailer, 10 cents advance over jobbing price. With the price of Billets approaching $20 and Spelter close to 6.50 cents, a further advance in Galvanized Wire before long is probable.

Smooth Wire.—The market for Smooth Wire continues steady at $1.45, base, with 40 cents advance for Galvanized, f.o.b. Pittsburgh or Cleveland. To single carload buyers the price is $1.50, base, f.o.b. Pittsburgh or Cleveland, and for less than carloads $1.55, an advance of 40 cents being made in both cases for Galvanized.

Pittsburgh.—The market is very firm, and we quote for February shipment: Smooth Wire at $1.45, base, with 40 cents advance for Galvanized, f.o.b. Pittsburgh or Cleveland. To the jobbing trade, 2½ cents advance per 100 pounds, less than carload lots, direct shipment on contracts; to the single carload buyer, 5 cents advance over the jobbing price; less than carload lots to retailer, 10 cents advance.

Galvanized Conductor Pipe.—On account of the increased cost of the raw material the manufacturers of Conductor Pipe, Eave Troughs, &c., announce an advance of 10 to 12½ per cent. on prices previously ruling. As we have already stated, the country is divided into four sections or territories, for each of which a separate schedule of prices is in force. The different territories may roughly be described as follows:

Eastern Territory: Covering the Northern States east of the Mississippi River, the southern boundary being the Chesapeake & Ohio Railroad from Newport News, Va., to Huntington, W. Va., Ohio River to Cairo, Ky., Mississippi River to the lakes, and thence east to Fort Howard, Wis., taking in the north peninsula of Michigan and Canadian points.

Central Territory: All north of South Carolina, Georgia, Alabama, Mississippi, Missouri and east of Indian Territory, Kansas, Nebraska, South Dakota, east of Sioux Falls and east of the line of the Great Northern Railway. Sioux Falls to Duluth to be in this territory unless included in the Eastern. Savannah, Ga., and Charleston, S. C., take Central territory prices.

Southern Territory: All east of Mississippi River not in Eastern or Central territories to be in this territory New Orleans is free.

Western Territory: All west of western lines of Southern and Central territories.

The prices on Conductor Pipe to the small trade in the different territories are as follows:

Eastern Territory.

	Discount. Per cent.
Small lots, nested	75 and 2½
" " not nested	75

Central Territory.

Small lots, nested	70 and 12½
" " not nested	70 and 10

Southern Territory.

Small lots, nested	70 and 10
" " not nested	70 and 7½

To jobbers in less than carload lots prices are about 10 per cent. lower than those given above, and on carload lots a further concession of 7½ to 12½ per cent is made, according to the territory. The prices to which merchants are entitled according to this arrangement are determined by the territory into which the goods are shipped and not by the shipping point.

Eave Troughs.—A similar advance has been made in Eave Troughs, on which the country is also divided into the territories above mentioned. The new prices are as follows to small dealers in less than carload lots:

	Discount Per cent.
Eastern territory	80 and 12½
Central "	70 and 7½
Southern "	80 and 2½

A further discount of 7½ to 10 per cent. is made to the jobbers in less than carload lots, the price in carloads being 7½ to 10 per cent. lower.

Elbows and Shoes.—An advance has also been made in the price of Elbows and Shoes, the regular discount to the smaller trade being 65 per cent. Freight is allowed not to exceed 5 cents per 100 pounds, and no freight is allowed on any shipment weighing less than 100 pounds.

Miters.—The discount on Miters has been advanced to 25 per cent. in less than carload lots to the smaller trade and of 45 per cent. to the larger buyers.

End Pieces and Drops.—The following are the list prices on End Pieces and Drops, which are subject to a discount of 25 per cent. to the smaller trade:

End Pieces and Drops.

Inches. Per dozen.	12-inch end pieces, slip or lap complete.	Drops only.	Ends only, slip or lap.
2	....	$0.60	....
2½	....	.65	....
3	....	.75	....
3½	$2.80	.80	$0.95
4	3.10	.85	1.10
5	3.45	.95	1.20
6	4.15	1.20	1.45
7	4.70	....	1.70
8	5.25	....	2.10

Brass Valves.—Owing to the great advance in Copper and Tin all Brass goods have been advanced materially, the prices being gauged naturally by the relative proportions of raw material and labor in the article. For instance, such goods as have considerable material and comparatively little labor show the greatest gains, while articles having a moderate amount of Brass in their composition, but highly finished, show more moderate advances, as labor is about the same as it has been. Brass Globe and Angle Valves, according to the conditions referred to, record changes varying from 30 to 50 per cent. over the extreme low prices of the last year or two.

Malleable Iron Fittings.—While no such radical advances in Iron and Steel as compared with Copper, Tin, Brass, &c., have been made, the present quotations for Malleable and Cast Iron Fittings cover advances of from 10 to 25 per cent. over low prices last year, there having been three upward movements since January 21.

Warm Air Registers, &c.—A revised price-list for Warm Air Registers, Ventilators, Faces and Borders for 1899 was adopted at a meeting of the Register manufacturers held in Cleveland, Ohio, on February 8. The new list is dated February 1, but actually became operative on the 9th. It shows numerous advances, although some of the leading sizes of Registers remain unchanged in price. The present list, whch is given herewith, has been agreed to by all the manufacturers and supersedes that of December 27, 1897. It is subject to the following regular discounts:

	Per cent.
Black Japanned Registers, Ventilators, Faces and Borders	50
White Japanned Registers, Ventilators and Faces	40
Bronzed Finishes in Imitation of Gold, Silver, Copper or Bronze	40
Nickel Plated	50
Electro-Plated in Brass, Bronze, Copper or Oxidized Silver	40
White Porcelain	30
Solid Brass and Bronze Metal	25

Warm Air Registers, Ventilators, &c.

Revised List February 1, 1899.

Warm Air Registers.

Size of Opening.	JAPANNED—BLACK OR WHITE.				BRONZED, GOLD, COPPER.			ELECTRO-PLATED AND PORCELAIN.			NICKEL-PLATED.			BRASS AND BRONZE METAL		
	Register.	Register face.	Floor border.	Register without valves.	Register.	Face.	Floor border.	Register.	Face.	Floor border.	Register.	Face.	Floor border.	Register.	Face.	Floor border.
4 x 8	.85	.30	.60	.75	1.05	.50	.80	2.15	1.50	1.75	1.40	.93	1.00	1.85	1.45	1.45
4 x 10	.95	.35	.65	.85	1.15	.55	.85	2.30	1.55	1.95	1.50	1.00	1.10	2.25	1.80	1.80
6 x 8	1.00	.45	.65	.85	1.25	.65	.90	2.60	1.70	2.05	1.70	1.10	1.25	2.50	2.00	2.00
6 x 10	1.05	.60	.70	.90	1.40	.85	1.10	2.70	1.80	2.25	1.80	1.20	1.35	3.10	2.50	2.50
6 x 12	1.20	.70	.75	1.05	1.60	1.00	1.20	3.20	2.00	2.45	2.00	1.30	1.45	3.75	3.00	3.00
7 x 10	1.10	.65	.70	1.00	1.50	1.00	1.15	3.00	1.95	2.40	1.95	1.25	1.45	3.70	3.00	3.00
8 x 8	1.05	.60	.65	.95	1.45	1.00	1.15	3.00	1.95	2.30	1.95	1.25	1.45	3.45	2.80	2.80
8 x 10	1.10	.65	.70	1.00	1.50	1.05	1.20	3.20	2.10	2.40	2.10	1.40	1.50	4.20	3.50	3.50
8 x 12	1.25	.75	.75	1.15	1.70	1.20	1.35	3.45	2.25	2.50	2.25	1.50	1.60	5.05	4.20	4.20
8 x 14	2.00	.95	1.20	1.80	2.40	1.40	1.65	4.00	2.60	3.00	2.60	1.70	1.80	5.90	4.90	4.90
9 x 12	1.40	.85	.85	1.30	2.00	1.30	1.50	3.80	2.40	2.65	2.45	1.55	1.65	5.80	4.80	4.80
9 x 14	2.05	1.05	1.25	1.90	2.55	1.60	1.70	4.20	2.80	3.00	2.90	1.75	1.85	6.75	5.65	5.65
10 x 10	1.55	.90	.85	1.40	2.20	1.30	1.55	3.75	2.40	2.55	2.45	1.60	1.65	5.50	4.60	4.60
10 x 12	1.60	.95	.90	1.45	2.30	1.40	1.60	4.10	2.70	2.80	2.65	1.75	1.75	6.60	5.50	5.50
10 x 14	2.10	1.10	1.30	1.85	2.60	1.70	1.90	4.65	3.15	3.10	2.95	2.00	2.00	7.60	6.40	6.40
10 x 16	2.65	1.40	1.60	2.35	3.40	2.05	2.25	5.35	3.55	3.60	3.65	2.25	2.20	8.70	7.35	7.35
12 x 12	2.55	1.40	1.60	2.30	3.30	2.00	2.20	5.00	3.20	3.25	3.40	2.05	2.20	8.20	6.90	6.90
12 x 14	2.85	1.55	1.70	2.55	3.85	2.35	2.45	5.65	3.65	3.65	3.85	2.35	2.45	9.50	8.10	8.10
12 x 15	2.95	1.70	1.75	2.65	4.20	2.50	2.55	6.00	4.05	4.05	4.20	2.50	2.55	10.15	8.60	8.60
12 x 16	3.45	1.85	1.85	3.10	4.40	2.75	2.65	6.40	4.30	4.30	4.40	2.75	2.65	10.80	9.15	9.15
12 x 17	3.70	2.00	1.90	3.35	4.65	2.95	2.80	6.80	4.60	4.60	4.65	2.95	2.80	11.50	9.80	9.80
12 x 18	3.95	2.15	1.95	3.50	5.00	3.10	2.95	7.20	4.85	4.85	5.00	3.10	2.95	12.15	10.30	10.30
12 x 19	4.20	2.30	2.00	3.75	5.50	3.25	3.10	7.60	5.10	4.95	5.50	3.25	3.10	12.90	10.90	10.90
12 x 20	5.00	2.45	2.25	4.55	6.00	3.50	3.25	8.00	5.40	5.30	6.00	3.50	3.25	13.50	11.50	11.50
14 x 14	4.50	2.00	1.95	4.00	5.40	3.00	3.00	7.00	4.70	4.50	5.40	3.00	3.00	11.40	9.75	9.75
14 x 16	4.80	2.15	2.10	4.30	5.80	3.30	3.25	8.00	5.40	5.00	5.80	3.30	3.25	13.15	11.15	11.15
14 x 18	5.20	2.35	2.35	4.60	6.30	3.70	3.50	9.35	6.10	5.50	6.30	3.70	3.50	14.70	12.50	12.50
14 x 20	5.60	2.60	2.60	4.90	6.90	4.15	3.75	10.20	6.70	5.95	6.90	4.15	3.75	16.30	13.90	13.90
14 x 22	6.00	2.90	2.95	5.25	7.50	4.45	4.00	11.00	6.90	6.40	7.50	4.45	4.00	18.00	15.30	15.30
16 x 20	7.15	3.35	3.15	6.35	8.55	4.80	4.55	11.20	7.65	6.00	8.55	4.80	4.55	19.50	16.50	16.50
16 x 22	8.35	3.75	3.40	7.50	10.00	5.45	5.05	13.35	8.50	7.00	10.00	5.45	5.05	21.30	18.15	18.15
16 x 24	8.75	3.95	3.60	7.85	10.50	6.00	5.35	14.15	9.60	7.80	10.50	6.00	5.35	23.40	19.80	19.80
18 x 18	9.25	4.00	3.85	8.25	11.10	6.25	5.50	14.30	9.65	7.95	11.10	6.25	5.60	20.25	17.35	17.35
18 x 24	10.65	4.75	4.15	9.55	12.75	7.60	6.75	17.35	11.80	9.65	12.75	7.60	6.75	27.50	23.25	23.25
20 x 20	9.50	4.10	3.95	8.50	11.40	6.85	5.60	15.35	10.65	8.00	11.40	6.85	5.60	25.75	22.15	22.15
20 x 24	11.25	5.10	4.35	10.10	13.50	8.00	7.40	17.60	12.25	10.00	13.50	8.00	7.40	31.10	26.50	26.50
20 x 26	12.70	5.60	4.60	11.50	15.25	9.25	7.85	20.30	14.00	11.00	15.25	9.25	7.85	33.55	28.75	28.75
21 x 29	14.95	6.20	5.10	13.20	18.00	11.00	9.00	22.50	15.25	12.50	18.00	11.00	9.00	40.15	34.25	34.25
24 x 24	14.95	6.20	5.10	13.20	18.00	11.00	9.00	22.50	15.25	12.50	18.00	11.00	9.00	40.15	34.25	34.25
24 x 32	21.25	9.30	7.40	19.00	25.50	14.55	12.25	32.00	19.65	17.00	25.50	14.55	12.25	52.50	45.50	45.50
27 x 27	18.60	8.60	6.75	16.60	23.35	12.75	11.00	33.00	23.50	17.00	23.35	12.75	11.00	52.00	45.00	45.00
27 x 38	28.00	13.50	8.50	25.50	33.60	20.00	15.00	41.75	27.00	22.50	33.60	20.00	15.00	73.25	63.40	63.40
30 x 30	24.50	10.50	8.25	22.00	29.40	17.50	13.25	36.75	25.35	18.50	29.40	17.50	13.25	67.10	58.00	58.00

Round Registers.

JAPANNED—BLACK OR WHITE.

Size of opening, inch.	Register.	Register face.	Floor border.	Register without valves.
6	.90	.40	.65	.80
7	1.00	.50	.70	.90
8	1.05	.60	.75	.95
9	1.30	.75	.80	1.15
10	1.55	.90	.85	1.40
12	2.55	1.40	1.60	2.30
14	4.50	2.00	1.95	4.00
16	6.00	2.60	2.40	5.40
18	8.25	3.50	3.35	7.25
20	9.50	4.10	3.95	8.50
24	14.95	6.20	5.10	13.20
30	24.50	10.50	8.25	22.00

BRONZED.		ELECTRO-PLATED AND PORCELAIN.		NICKEL.	
Register.	Floor border.	Register.	Floor border.	Register.	Floor border.
1.15	.85	2.50	2.00	1.60	1.15
1.30	.95	2.65	2.05	1.75	1.25
1.45	1.15	3.00	2.30	1.95	1.40
1.75	1.35	3.65	2.40	2.15	1.50
2.20	1.55	3.75	2.55	2.45	1.65
3.30	2.20	5.00	3.25	3.40	2.20
5.40	3.00	7.00	4.50	5.40	3.00
7.15	3.50	9.70	5.50	7.15	3.50
9.00	4.50	13.00	7.00	9.00	4.50
11.40	5.60	15.35	8.00	11.40	5.60
18.00	9.00	22.50	12.50	18.00	9.00
29.40	13.25	36.75	18.50	29.40	13.25

HEAVY ROUND GRATINGS.

Size of opening.	Grating.	Border.
30 inch	10.50	8.25
36 inch	15.25	11.55
48 inch	25.00	15.00

CONVEX REGISTERS.

Size of opening.	Japanned.	Bronzed.	Plated. Brass-bronze.	Plated. Nickel.
6 x 8	1.40	1.70	3.25	2.15
6 x 10	1.50	1.90	3.40	2.25
8 x 8	1.55	1.95	3.75	2.45
8 x 10	1.60	2.15	4.00	2.65
8 x 12	1.80	2.45	4.30	2.85
9 x 12	2.00	2.75	4.75	3.05
10 x 12	2.35	3.15	5.15	3.30
10 x 14	3.00	3.80	5.70	3.85
12 x 15	4.40	5.60	7.20	5.60
CIRCULAR TOP REGISTERS, CONVEX.				
8 x 12	1.80	2.45	4.30	2.85
9 x 12	2.00	2.75	4.75	3.05
10 x 14	3.00	3.80	5.70	3.85
CIRCULAR TOP REGISTERS.				
7 x 10	1.25	1.65	3.00	1.95
8 x 12	1.55	2.00	3.45	2.25
9 x 12	1.75	2.35	3.80	2.50
10 x 14	2.35	2.95	4.65	2.95
11 x 13	3.15	3.75	5.25	3.75
SELF INDICATING VENTILATORS.				
6 x 8	1.10	1.35	2.70	1.80
6 x 10	1.15	1.50	2.80	1.90
7 x 7	1.10	1.40	2.75	1.85
7 x 10	1.25	1.65	3.10	2.05
8 x 8	1.20	1.55	3.10	2.05
8 x 10	1.30	1.70	3.30	2.20
8 x 12	1.45	1.90	3.55	2.35
8 x 15	2.20	2.70	4.30	3.00
9 x 12	1.60	2.20	3.90	2.55
9 x 14	2.15	2.70	4.30	3.00
10 x 10	1.70	2.30	3.85	2.55
10 x 12	1.80	2.40	4.20	2.75
10 x 14	2.25	2.95	4.75	3.05
10 x 16	2.75	3.50	5.45	3.75
12 x 12	2.65	3.40	5.10	3.50
12 x 15	3.05	4.30	6.10	4.30
12 x 17	3.80	4.75	6.90	4.75
12 x 19	4.30	5.60	7.70	5.60
14 x 22	6.20	7.70	11.20	7.70

Common Carriage Bolts, Lag Screws, &c.—The market for Common Carriage Bolts is naturally strong and prices are somewhat higher. In many cases quotations made by the manufacturers are higher than those made by the jobbers, whose stocks permit them to sell at prices that approximate those recently prevailing. Thus, while prominent manufacturers are quoting Common Carriage Bolts at discount 75 and 15 per cent. as a low figure, a good many jobbers are still selling at discount 80 per cent. Manufacturers' quotations on this line of goods are about as below:

	Discount. Per cent
Common Carriage Bolts	75 and 15
Bolt Ends	80 and 5
Machine Bolts	80 and 5
Lag Screws, cone point	85 and 5
" " gimlet "	85 and 2½

Putnam and Neponset Horse Nails.—The quotations for Putnam and Neponset Nails, to which reference was made in our issue February 2, are f.o.b. Boston and are for the market east of the Rocky Mountains. The Western market quotations for these goods remain unchanged.

Nuts.—The prices for Nuts are firmly maintained and some of the manufacturers are naming slightly higher prices, but there has been no general advance within a week or two. The market is represented by the following quotations:

	Cents off list.
Hot Pressed Nuts, square	6.50
" " " hexagon	7.30
Plain Cold Punched Nuts, U. S. Standard, square	6.20
" " " " " " hexagon	6.60
Cold Punched, C. T. & R. Nuts, U. S. Standard, square	6.30
" " " " " " hexagon	7.20

Blacksmiths' Vises.—An advance of about 10 per cent. has been made by most of the manufacturers of Blacksmiths' Vises.

Wrought Butts.—The manufacturers of Wrought Butts have made an advance of about 10 per cent. in the prices of these goods, and the market is characterized by a firm tone. A large volume of business has been done and the market is still active.

Wire.—There is a good deal of uncertainty in regard to the prices for Market and Stone Wire on account of the successive advances which have been made, the withdrawal of quotations, &c. Some of the manufacturers, in fact, are refusing to quote at the present time, and the prices which have been ruling are materially higher than those current a short time ago. The demand has been so heavy that most of the manufacturers have no goods to offer.

Goods Made of Wire.—On account of the condition of the Wire market most goods into which Wire enters as a material are strong in tone, if not actually advanced. In many cases where considerable Wire is used in their manufacture material advances have been made necessary, and the manufacturers of such goods are pursuing a very conservative policy on account of uncertainty in regard to obtaining Wire and the prices which are likely to rule. The condition of the market is illustrated in the remark of a manufacturer of a Hardware specialty in which Wire is used, that on account of the advances which have been necessitated he is apprehensive that he will be unable to ship goods abroad as heretofore, the price being too high to permit of the successful marketing of the goods in view of European competition.

Wire Cloth.—The market for Screen Wire Cloth is in such a condition as to permit manufacturers or merchants who have a stock on hand to realize an attractive profit on the goods. Few manufacturers are, however, in a position to supply Cloth, and some of them are endeavoring, it is reported, to purchase from jobbers with a view to meeting the needs of customers of whom they are especially desirous of taking care. There is considerable diversity in the prices which are made to the small trade. Some jobbers are still selling at something like 90 cents, but others are demanding $1 and in some cases $1.10. In the present condition of the market it would appear likely that the latter figure may in some cases be obtained by the jobbers. The prices made by the jobbing trade are certainly at the present time on the whole lower than those quoted by the manufacturers.

Poultry Netting.—The manufacturers of Poultry Netting are full of orders taken at the old prices. Any new business is at a perceptible advance We are advised that the manufacturers and jobbers in New England have adopted 85 per cent. discount as the lowest price from factory.

Brass and Bronze Metal Screws.—At a meeting of the manufacturers held to-day (Tuesday) the following changes were made in the circular rates for Brass and Bronze Metal Screws:

	Discount. Per cent.
Flat Head Brass	80 and 10
Round and Oval Head Brass	75 and 10
Flat Head Bronze Metal	75 and 10
Round and Oval Head Bronze Metal	75

These advances are made necessary on account of the increased cost of the raw material. No change has been made in the price of Iron Screws.

Atlas Mfg. Company.—Atlas Mfg. Company, New Haven, Conn., announce that on account of the large advance in material and the uncertainty as to its price in the future they withdraw prices on their line of Wire Goods. They will do their best to serve their customers, but are still three or four weeks behind their orders.

(*Continued on page 44.*)

Third Annual Convention North Dakota Retail Hardware Association.

THE third annual convention of the North Dakota Retail Hardware Association was held at Grand Forks on the 15th inst. The attendance was gratifying.

President Kelley of Devil's Lake called the meeting to order, and after a brief speech announced that in the absence of Mayor Dinnie City Attorney Bangs would welcome the delegates. Vice-President Jacobs of Hillsboro responded on behalf of the association.

Committees.

Following the roll call by Secretary Barnes a motion was made to appoint the following committees: Committee on Press—Messrs. Halverson, Bostwick and Umlevy. Committee on Resolutions—Messrs. Helgesen, Murphy and Upham. Committee on Transportation—Messrs. Nuss, Duntley and Black.

President Kelley named the Committee on Nominations as follows: Messrs. Murphy, Duntley, Pinkerton, Newgaard and Jacobs.

President Kelley's Address.

Mr. Kelley then delivered his annual address, as follows:

It is with much pleasure that I greet you after another year's work and life of our association. It is to be regretted that so many of our members are absent from the State and cannot be with us, but we are glad to welcome as many as are here and wish for a successful meeting.

Within the past year many firms that were against us a year ago are now with us, and the organization is

MUCH STRONGER THAN BEFORE.

The members have been very loyal. The member who is disloyal does not realize perhaps that he is weakening the whole organization, but it is so, and I wish to emphasize that individual loyalty is essential to the success of the association. Without it we can acomplish nothing.

I have just returned from St. Paul, where I attended the Minnesota meeting there. They had a large and enthusiastic meeting, and we also met the delegates from Wisconsin, who reported a most successful meeting there, and a very large increase in membership.

WORKING IN HARMONY.

At the meeting held in St. Paul an important change was made in the constitution. A part of one section was stricken out, where it referred to the size of a city, so that at last we are working in harmony. That clause gave more trouble last year with the jobbers and manufacturers than any other one thing. So now the dealers in the smallest towns get the same protection as dealers in cities.

The State of Iowa organized last week, and we believe that they will join us in the Northwestern Association, which would add greatly to our strength, as they have a membership of over 200 to start with.

A meeting of the Executive Committee was held last October, when all the business that had accumulated up to that time was transacted. There should be

MORE INDIVIDUAL WORK

done to increase our membership by urging those dealers who are not members to join us. There is no reason why we should not have every legitimate dealer with us.

Our financial condition is good. The expenses have been greater the past year than they will be the next year.

MR. BARNES' WORK APPRECIATED.

The duties of our secretary, who has so faithfully fulfilled all that has fallen upon him, have been twofold, causing double work and double expense. Through a readjustment of affairs with the Northwestern Association a part of the work, that which pertains to jobbers and dealers, has been assigned to the Northwestern Association, the secretary thereby giving more force to such correspondence and relieving our secretary in part. The remuneration our secretary has received for his services is nothing in comparison with the work he does. To give you some idea of the correspondence he has done, our postage account is something over $70 for the past year. We as a body cannot thank him too much for his untiring efforts for the good of our cause.

Among other things we must consider is the subject of our best friends, the jobbers, and express to them a vote of thanks for the deep interest they have taken in the success of the association, and thank them one and all for the interest they have manifested in our work.

Mr. Penfield's Remarks.

W. C. Penfield of the Minnesota Iron & Steel Company responded in behalf of the traveling men. He spoke of the good derived from the conventions both in North Dakota and Minnesota and hoped to see the Northwestern Assoctiation grow into a national association.

The Secretary's Report.

Secretary Barnes read his annual report, which was as follows:

In this, my second annual report, I will attempt to carry you through the year, describing as clearly as possible the work done in the secretary's office through the guidance of your president and executive officers.

AVAILABLE MEMBERS IN STATE.

At the commencement of the year we had 86 members, and have been able to increase that number to 106, out of a possible 190 regular Hardware dealers in the State. I have addressed the remaining 84 dealers on an average of once a month, during the year, trying to induce them to join with us in our work, and I am in great hopes that the convention may be the means of getting a large number of them in our association, and I feel that once they understand our motives and accomplishments they will not regret the small expenditure required from each member to assist in defraying the expenses that are necessary in carrying out the work.

TO INCREASE OUR MEMBERSHIP.

The greater portion of the first three months of this year was devoted largely to trying to increase our membership and also to getting much necessary information compiled to assist in the progress of our work.

BUSINESS DONE AT OUR LAST MEETING.

The first letter I sent to the dealers in the State after our annual meeting was February 22, in which I set forth some of the matters discussed and acted on at that meeting, more particularly referring to the formation of the Northwestern Association and the reduction of fees in our State association, and urging as strongly as possible the joining of all Hardware dealers in North Dakota in our association. From this letter I received many replies and several applications for membership.

THE NEW LIST.

For the first three months of the past year our association was furnished lists, such as used by the Minnesota Association for their guide in purchasing during 1897. On May 15 Secretary Clark of the Northwestern Association mailed a new list known as the "pink list" to all members of the Winconsin, Minnesota and North Dakota associations. This list was very complete, and prepared with great care to show the exact standing of the firms therein contained, and it is my belief that the list has been used by our members for their guide in purchasing, in the very large proportion of cases, and when members have made purchases from unfriendly concerns I feel very positive it has been through

thoughtlessness on their part in not examining the list oftener to enable them to keep in mind the friendly houses.

UNFRIENDLY HOUSES.

Undoubtedly many of you during the past year have had business solicited by concerns that are listed unfavorable to our work, they using all kinds of persuasion and inducements to obtain your business, the orders undoubtedly to be used for capital by them in trying to influence other members for additional trade. I am very glad in this connection to say that I believe very few of our members have allowed themselves to be influenced, and that they are living up to their promises as closely as possible and using the "pink list" for their guide.

PUBLISHING A LIST OF MEMBERS.

In Secretary Clark's report before the Minnesota Association he suggests the advisability of compiling a list of all members of the association and placing it in the hands of members, to enable them, when told by persons soliciting trade from unfriendly houses that they had taken an order from so and so, who is a member of your association, to refer to it and ascertain if the representations were true or not. Such suggestion on Mr. Clark's part I approve, and believe it advisable to furnish our members with same.

CORRESPONDENCE.

That you may understand more thoroughly the value of correspondence required in this office, will state that during the past 12 months I have used 841 pages in my letter book. I have addresed both the members of the association and those we are trying to get for members on an average of once a month, and the members of the Executive Committee have been written to in each county several times during the year asking their cooperation in securing new members.

To the jobbers and manufacturers, as I explain more in detail later on, I have probably sent 1000 pieces of mail. The postage stamps I have bought, as my financial statement shows, amount to $77.37, and estimating as closely as possible from the figures presented I have in this office handled about 8000 pieces of mail.

DEPARTMENT STORES IN NORTH DAKOTA.

About the first of June I was instructed by our president to prepare a list of department stores and catalogue houses in North Dakota. This was to carry out a request coming from the Northwestern Association secretary's office for such information, the same request having also been made through that office to the Wisconsin and Minnesota associations. I at once took the matter up and on June 27 addressed a letter to each member of the association, requesting that they furnish me with that information. Many replied promptly, from others it necessitated many letters to obtain the information wanted, and it was by over 60 days' correspondence that it was thought that we had gathered all the information necessary to complete such a list. On October 6 the president called a meeting of the Executive Committee in Grand Forks to take action more particularly on the list of stores furnished me, and also to transact any other business that might come before the meeting. The members present were C. W. Kelley, C. E. Jacob, I. F. Newgaard, W. H. Pinkerton, W. R. McIntosh and H. B. Allen. H. D. Helgesen of Milton and John Wagner of Lidgerwood met with the committee. The session was a busy one. In discussing and going over the information collected, all evidence obtained was weighed with great care by the committee and it was after several hours' consultation that the list was completed.

As the Wisconsin and Minnesota associations up to this time had not completed their lists, and as several of the towns in our State had full-fledged department stores that we were unable to take up with the jobber or manufacturer selling them on account of the conflicting wording of our resolutions and the Northwestern Association's, it was impossible in many cases in smaller towns where these stores were being operated for our association to say or ask anything from the firms selling them until some action should be taken on the resolutions by our Executive Committee, and it was with the view of remedying this obstacle that the Executive Committee at this meeting instructed me to prepare a letter furnishing in it all names of the stores decided on, in our State, that were being conducted in a manner detrimental to the retail Hardware trade, and mail same to every firm reported favorable in the pink list. On October 12 I had this letter ready and mailed same to 396 firms. This number constitutes those reported favorable in the list.

To this letter we received prompt replies from probably half, sanctioning this feature of our work, as it enabled them without a doubt to know just what concerns in our State were conducting their business in a demoralizing manner. As there were still many firms that I received no reply from, I again on November 12 prepared another letter and sent to those not replying to my first letter. This feature of my work in obtaining position of firms reported favorable required a large amount of correspondence to ascertain where they were at; in some cases it required four or five letters to get their expression, and in a few cases even more. One firm I can recall that paid no attention to any of the communications except those that I sent by registered mail. As we are now in possession of replies from all firms that solicit trade in our State whom we are more particularly interested in, I await the instruction of the association as to the further disposition of this branch of our work.

INFORMATION ASKED FROM MEMBERS.

After this list of stores was prepared and mailed, I wrote to every Hardware firm in the various towns throughout the State where the Executive Committee found detrimental stores were being operated, and asked them to advise me of any shipments of Hardware, and from whom, to the stores so listed. As yet I have received but one complaint, that coming about a week ago, and the concern making the shipment are one our association has never had a report on, and are operating a retail store in the Twin Cities. The matter is now in the hands of the Northwestern Association for investigation, and undoubtedly within a few days the matter will be disposed of.

MEMBERS PULL TOGETHER.

I have endeavored at all times to keep in close touch with our members, urging them to bring to my notice such matters that occurred to them that would be of interest to our association, and I have tried to impress on them the necessity of all pulling together for the progress of our association, and I certainly commend the noble stand our members have taken whenever an emergency presented itself for such action.

TAX FOR PEDDLING.

About the middle of December it was suggested by Mr. Joy of Hamilton that an investigation be made toward the preparation of a bill to present at the session of the Legislature, to tax the occupation of peddling within the State. Correspondence seemed to develop a most universal desire to have some such steps taken, and with that end in view the services of an attorney were employed and a bill drafted to cover such grounds. One of the conditions of the bill is such that each county where peddling is being done will receive the tax therefrom. This bill was introduced in the Senate on the 7th, and I now urge that all of our members, if they have not already done so, take the matter up with their representatives now at Bismarck and endeavor to obtain their support in the passage of the bill. To those who do not understand the motive of having such a bill enacted, will say that it is with the desire of having some benefit from the Steel Range peddlers that infected our State about a year ago, if they

ever see fit to visit us again, and get from them some sort of a recompense for the $20 or $25 that they receive for the Ranges more than equally as good an article could be purchased from any Hardware dealer in the State. In the preparation of this bill it was not the intent to do any injustice to any one, but it was the intent to make those soliciting business pay into the funds of the counties or State a fair amount for their share of the taxes that are required to conduct the expenses in the districts canvassed. This matter, as most of you recall, has been brought to your notice twice before through this office by circular letters of December 16 and February 1, and from many I have received replies stating that they had already taken the matter up with their representatives in the Legislature.

MEMBERSHIP.

As you will notice from this report, we have increased our membership during the past three months by 20 members. In the eyes of some that number may seem small, but when you make a comparison of the available dealers in our State that we could expect to get with the total we have now, our percentage of members, I believe, is larger than any similar State association, making very close to 60 per cent. of all the Hardware dealers in the State that are members of this association. I will admit that there are still 84 Hardware dealers that we would all welcome into our association, and I have endeavored in the most impressive way at my command to show them the advantages of joining with us. I seem so far to be unable to make much progress, and I would suggest that while we are in session some means may be offered to get the remaining dealers into our association.

DELINQUENT MEMBERS.

The number of delinquent members at this time is 14. A number of these have advised me that they would be present at this meeting and pay up. In a large number of cases I attribute the delinquency to oversight on the part of the members, as I have received but one communication during the year from a delinquent member stating that he did not care to continue his membership, and I sincerely trust that this member may reconsider such a step and continue with us in our work.

ASSIST OTHER STATES IN ORGANIZING.

It is my desire to see every State in the Union organized, and I trust that through our members now assembled some means may be suggested to promote the interest in the unorganized States, and that before another year has passed we will see many more State associations added to the present organization.

EXORBITANT EXPRESS CHARGES

Is a matter that is causing a great deal of discussion all over our State, but more particularly by the merchants in the Eastern States. I believe the work is commendable and that our association should adopt appropriate resolutions at the meeting showing the position we take.

CORRECT LIST OF DEALERS.

In my work as secretary, it is very essential that I should have an absolutely correct list of all Hardware dealers in the State, and to get this it will necessitate the assistance of the trade in obtaining it. To those who are in attendance and any dealers in the State that this report may reach, I would appreciate exceedingly if you would furnish me with the correct name of every exclusive Hardware firm in your town and county; also the names of other merchants that carry Hardware in connection with other lines. Will those in attendance kindly hand me this information before returning home?

TRADE PAPERS.

We are under many obligations to the trade papers throughout the country in assisting us in our work. They are always ready to carry items of interest in connection with our work to the readers and ever willing to help us in the progress of our work. I would suggest that appropriate resolutions be passed at this meeting setting forth the appreciation of this association of the services furnished us by such papers.

NATIONAL ASSOCIATION.

The matter of forming a national association is one that is being discussed by a great many, and it seems to be the desire of all that whenever the proper time comes such an organization should be perfected and would be the means of accomplishing much good.

JOINT ASSOCIATION MEETING AT ST. PAUL.

On December 27, at a meeting of the Minnesota Association, a resolution was passed requesting a joint meeting of representatives of the Minnesota, Wisconsin and North Dakota associations at St. Paul during the convention of the Minnesota Association for the discussion of matters of mutual interest. On this trip President Kelley selected H. N. Joy and C. A. Barnes to accompany him as the desired committee of three, and through some of them this convention will be informed of the matters discussed and arguments entered into. My only regret is that all dealers in our State could not have accompanied us on this trip, as the meeting of the Minnesota Association was one of great instruction and enjoyment to those present.

IN CONCLUSION.

To the president of this association, who was ever ready to devote his time to the work of his office and to assist and guide me in my duties, and to the other officers and members who have given me valuable assistance by kind words and encouragement in the discharge of my duties, I extend my sincere thanks and trust that ere this year has passed all of us will be able to see many improvements in the condition of the Hardware dealers of this State.

Thanking you for your kind attention, I submit my report for your consideration.

The Treasurer's Report.

Treasurer H. N. Joy of Hamilton made his report, which shows that the total receipts of the association for the year were:

February 16, 1898, balance received from treasurer	$77.19
Membership fees	50.00
Dues	413.50
Total receipts	$540.69
Total balance	476.96
Balance on hand	$63.73

The report was referred to a special committee for approval.

Messrs. Helgesen, Pinkerton and Jacobs were appointed a Committee on Fire Insurance.

Short Addresses.

J. F. Niemeyer said that since the association had been organized he had done much work to further the ends of the association both in North Dakota and Minnesota, and most emphatically urged that every member should go out and make a personal canvass for new members and not to give up until repeated attempts had failed.

Mr. Graham, the Michigan Stove man, said his house was very much in favor of the organization and spoke somewhat against department stores. He stated that his house had refused to sell goods to houses unfavorable to the organization.

H. L. Chaffee was very much convinced of the effective work being done by these organizations in the country. He stated that he refused to work for houses unfavorable to this movement. We were now on the eve of a new era, and Hardwaremen could better their interests by joining the association.

James E. O'Brien's Address.

Mr. O'Brien, president of the Minnesota Association, spoke of the recent convention held at St. Paul. He considered it one of the most enthusiastic meetings ever

held. He had received numerous letters of inquiry from every part of the United States. He quoted as a great evidence of the foundation upon which the organization rests the fact that *The Iron Age* was specially represented at the meeting. Twelve States had associations similar to this one, and the rest were rapidly falling into line. Hardwaremen no longer refuse to speak to one another, but meet as friends and stand upon equal footing. That feeling of revenge which drags out our life blood no longer exists, and a great change toward the establishment of firmer friendship is rapidly coming about. At the meeting at St. Paul 80 members had been added to the organization, and now the organization numbered 450.

Other Addresses.

Colonel Brown, a veteran Hardwareman, was called upon and related his experience in the business in the early days. He said that although he was not in the Hardware business now yet he always took a great interest in the meetings and was glad to see that such an organization was existing. Much good would be accomplished by it.

Mr. Fitzpatrick, with Hibbard, Spencer, Bartlett & Co. of Chicago, spoke of the work being done by the association and hoped that it would be continued until every Hardware merchant in the State would be a member of the organization.

A paper on advertising was then read by A. J. Smith, and some very interesting and useful hints were given.

The Modern Concentration of Business and Its Logical Consequences.

H. T. Helgesen of Milton read a paper on the above subject, as follows:

That we are living in a wonderfully progressive age no one will deny. Never before in the history of the world has civilization and enlightenment taken such giant strides as in the nineteenth century. Never before has science and the inventive genius of man been as active and successful as in the last half of this wonderful century. So numerous are the inventions and the instances of unusual progress that I could not take time to give even a synopsis of them all. But, generally speaking, the progress and enlightenment of this century has resulted in the uplifting and betterment of humanity.

THE WAGE WORKERS

of our land have never been on so satisfactory a basis. Never before has a day's labor been able to purchase so many of the necessities and luxuries of life as it does to-day, and what 50 years ago were considered as luxuries to be indulged in only by the favored few are to-day counted among the necessities of the masses. Under our beneficent and generous educational laws education has fully kept pace with the progress made along other lines, and the masses of the American people stand on a higher level from an educational point of view than they ever stood before.

The business world of which we are a part has had its full share of the progress of this wonderful century, but whether the progress attained and the new methods it has introduced into business have been for the interest and benefit of humanity is a serious question. The changes and new methods adopted by the New World are so numerous that we have not the time to discuss them all, and I have therefore selected what to my mind is the most important and the

MOST SERIOUS PROBLEM

that the new order of things has forced upon us, and will ask your indulgence for a few minutes while I call your attention to "The Modern Concentration of Business and Its Logical Consequences."

A hundred years ago had any man brought forth a scheme or plan that had for its object the absolute control of any of our great commodities over the entire United States he would certainly have been looked upon as a man unworthy of the confidence of the business world. Had he been so bold as to say that he proposed to take the entire civilized world for his field of action his sanity would not only have been seriously questioned but he would have been in danger of being incarcerated in a lunatic asylum without further evidence. But the

NEW ORDER OF THINGS

has so changed business methods and sentiments that to-day such plans are looked upon as perfectly feasible, and why should they not be? Have we not already in successful operation a gigantic organization that so far as the commodity in which it deals is concerned is absolute dictator to the world? We have several other similar organizations that to-day practically own and control the business in the United States in their respective lines. Such trusts, pools and combinations cannot be looked upon as anything but unmitigated evils. They not only concentrate business, but through their ability to wipe out all legitimate competition become dictators to the people, and the inevitable is an enormous concentration of wealth, which is seldom if ever in the interests of the masses. One of the greatest of these evils is yet in its infancy, but to my mind it is one of the most serious yet attempted, first because of its scope, and second because it comes to the people like a wolf in a lamb's clothing, with the outward appearance of a philanthropic missionary that promises peace and prosperity to all who follow his advice, but with the heart of a Shylock, and when once the people are in its power it will not fail to demand the pound of flesh. This institution is what is generally known as the

CATALOGUE HOUSE.

It is impossible to realize the consequences of this business method except by taking a look forward, as Bellamy looked backward, and thus follow this principle to its logical conclusion. The theory upon which the catalogue house is built is that the retailers and the jobbers dependent on it are not a necessity. That the catalogue house can supersede these with great profit to themselves and benefit to the people. That these houses can reap great profits there is no question, but can they and will they benefit the people? That is the question that can only be answered intelligently when we have note the changes that will have been wrought when these concerns are in full possession of the mercantile business of the world.

The only way by which this country can attain the highest possible degree of prosperity is by so dividing its population into

PRODUCERS AND CONSUMERS

that what one class produces the other will consume. If in any industry we shall find it impossible to so arrange it that its entire product would be consumed at home, the prosperity of that industry would still depend on how near we could bring it to this high ideal. I say high ideal because every intelligent person knows that there is no market in the world that is worth as much to the seller of any product as the American market. Therefore, any cause that tends to destroy or even decrease the American market for any of our products is a positive detriment and injury to every person engaged in that industry. If the same cause not only decrease the market but at the same time increase production in that line it would be a two-fold injury under which few if any of our industries could successfully operate.

If the catalogue house successfully carries out its avowed plan of

DRIVING OUT OF BUSINESS

every retailer and shop keeper in the world it will have turned down and out of employment an army of men, women and children, the number of which is so great as scarcely to be comprehended by the ordinary individual. This vast army being deprived of the privilege of earning a livelihood through the legitimate channels of trade will necessarily have to be absorbed by the other lawful occupations. The ranks of the laborers, mechanics, artisans, miners and mill hands are already so crowded

as to seriously threaten the future prosperity of these callings. But in order to earn an honest living this

NEW ARMY OF UNEMPLOYED

will have to invade their ranks in large numbers, the result of which will undoubtedly be to force the price of all kinds of labor down to the lowest living rate. After filling all other legitimate callings to overflowing there will still remain a large majority of this vast army to be provided with employment, and they will have to become tillers of the soil. The retailers and the jobbers of the world can be depended on to give good account of themselves wherever they may land under these new conditions. For intelligence and keen business sagacity and judgment they are the equals if not the superiors of any other class in the world. Having forced these people out of their legitimate calling and distributed them in the other industries, what will be the new condition of things?

1. The number of farmers will be largely increased, which will result in enormous increase in the products of the farm.

2. The demand for farm products will be lessened not only by decreasing the consuming population but far more by reducing wages to a point that will preclude the masses from buying more than the absolute necessities of life.

3. The demand for the products of the factory will suffer just as much by

REDUCING THE ANNUAL WAGES

of the world. The world's market will be reduced in almost the same proportion.

The farmer that has not studied this question thoroughly will naturally think that what he cannot sell in the American market he can dispose of abroad, as he has always done. But he fails to take into consideration the fact that the principle of concentrating business is already introduced into every civilized land in the world and everywhere with the same result—viz., the throwing out of employment of millions of men and so organizing business that women and children at starvation wages can do the work that before required competent men at good salaries, displacing able bodied men with girls and children who work long hours for a mere pittance.

CONCENTRATION LIKE DEATH.

We are too apt to judge the department stores by the comparatively small concerns with which we are familiar and which generally are the enlargement of some general store. But the retailer who branches out into a department store, hoping thereby to save himself, always reminds me of the consumptive who goes to the South to a more salubrious climate to regain his health, but he discovers that the yellow fever is just as deadly as consumption.

The modern concentration of business is like death in that it is no respecter of persons, and its methods are so crushing and destructive that the smaller department stores, like the consumptive, can only hope to prolong life, for only such concerns as John Wanamaker and Siegel-Cooper Company can hope to weather the storm. When the mercantile business of the country has been concentrated in a few such concerns it will be an easy step to mold them into one great trust, and the men who control that trust will be the uncrowned kings, the rulers of the masses.

THE STANDARD OIL COMPANY.

We hear a great deal now about John D. Rockefeller, who was a poor lad but who by his genius as an organizer has concentrated the business of one of our great industries into a gigantic trust, thereby in a few years making himself one of the greatest men in the world and placing himself in a position where his will is law; not only in this country, but having forced Russian barons to terms he is to-day the supreme dictator of the world so far as the oil business is concerned. His Standard Oil Company are held up before the world by the would-be reformers something like a scarecrow in a cornfield and cited as an example of what the people may expect from the concentration of all kinds of business into trusts.

There is not to-day a farmers' convention and but few political conventions where speeches are not made and resolutions adopted against these trusts, and yet the men who do the hardest talking are the ones who will sit down at their desks and order a bill of goods from some catalogue house that they could have obtained from their nearest merchant, never thinking that they are building up trusts compared to which the Standard Oil Company are but a pigmy, and that every dollar thus spent will add a link to the chain that binds the masses into slavery. "Consistency, thou art a jewel," but thou hast no abiding place in the mind of the modern reformer.

CATALOGUE HOUSE TRUST THE GREATEST.

If the Standard Oil Company, the American Biscuit Company and such trusts, confining themselves to a single commodity, can levy a tribute upon the people amounting to millions of dollars, and in a few years becoming so powerful as to menace the Government, what can we expect from the catalogue house trust if allowed to carry out its purpose? A trust that will have in its power to dictate the price of every mouthful and every thread worn by the masses. One of the worst features of these modern methods is that with the seal of legality placed upon them it seems that the

AMBITION OF THOUSANDS

of our brightest and ablest young men is not to follow in the footsteps of their fathers but to aspire to that higher financial level where they will be able to wipe out competition in some particular line of business. It seems to me that the welfare of the nation depends on the purity of purpose and the hight of the ideal toward which they are working. Remember that every individual has rights that cannot be tampered with or he be deprived of.

A MISCHIEVOUS DOCTRINE.

The business world of to-day is adopting the doctrine that everything is right, but such a doctrine that sets at naught all moral rights and obligations will lead to disaster. Our forefathers declared that every individual possesses an inalienable right to life, liberty and the pursuit of happiness, but under the new method our forefathers were old fogies or they would have made a declaration which would have read: Every individual has an inalienable right to life and to as much liberty as his financial standing and organizing ability can secure for him. If we teach our youths by example that there is no right but might, then what can we expect of the rising generation? Surely such a doctrine will bring us to a crisis. Every epoch making crisis through which the world has passed has become possible simply because the people have blindly ignored the danger until it gained such a force that nothing could stop it. Some were so ignorant that they could not see the danger, others failed to raise a warning cry. The world has grown wonderfully in intelligence, but so has human selfishness and negligence of two classes of people.

I am very much afraid

HISTORY WILL REPEAT ITSELF,

first upon those whose ignorance prevents them from seeing the danger caused, and second by those who see the danger but refuse to take active part to stop it, but even patronize it because it puts a few paltry dollars into their pockets. The farmer seems willing to sacrifice the market for the product of his toil, and to court increased competition in his business. The people of every class who earn their bread seem willing to sacrifice their prosperity simply because they can save a few cents on their purchases. These people shout against trusts and patronize catalogue houses, and thus do more to concentrate business than all the other causes combined. How long will this last? Will the people realize their danger in time and see that they are selling their

birthright for a mess of pottage, or will they permit their manhood and rights to be crucified for a few pieces of silver?

It is easy to talk of reformers, but they do not come from fine spun theories enunciated in scorching resolutions or burning eloquence, but from manfully living out the

TRUE THEORY OF RECIPROCITY,

"I will stand by those who stand by me." Reciprocity should be the watchword of this association and of every other legitimate business organization, especially the wage earner and the farmer. Labor is the one commodity that never can be formed into a trust. The wage earner and the farmer have had to dispose of their commodities in a competitive market, and therefore it seems to me that these people should be in favor of reciprocity and be opposed to business concentration, for as concentration increases competition decreases and competition is the only safety valve of the business principle that rests on a reciprocal basis. A trust is a commodity or a number of them in the purchase and sale of which competition has been destroyed or in which the price can be obtained by a few. The wage workers and farmers know that trusts and monopolies are an evil, but do not understand that when they fail to practice reciprocity with their merchants and neighboring towns they are building up those trusts, for whom sooner or later they will become "hewers of wood and drawers of water."

The capitalists of the world are so imbued with the idea of concentration of business that they are

TAXING THEIR INGENUITY

to put up this medicine in so palatable a form that the masses will take it like an opium eater takes opium. But the time will come when he will be a slave and cannot resist, and will find that the dens are not public benefactors, and that hell as pictured in Dante's Inferno is nothing compared with the penalty they will have to pay for their folly. The masses are to-day patronizing all kinds of trusts, and forging the chains that will put them helplessly in the power of the people that they now look upon as their friends. Perhaps this disease has gone so far that it cannot be checked, but as sensible men and citizens it is our duty to raise a warning and combat the evil.

In conclusion let me say never apologize for belonging to the North Dakota Hardware Association, but study this subject thoroughly and discuss it with your customers and you will at least convince the intelligent ones that we are working for their interest as well as our own, and that the interests of the farmer, the wage worker and the retail merchant are identical so far as the modern concentration of business and its logical consequences are concerned.

Resolutions.

The following resolutions were adopted:

That we continue our connection with the Northwestern Hardware Association, and reiterate our determination to stand united until we shall see the birth of a national association that shall include every State in the Union.

Whereas, The trade papers of the country have been most loyal in their support; be it hereby

Resolved, That we extend to them our sincere thanks and appreciation for their good will and encouragement, and hope that reciprocity in its broadest sense may govern our relations in the future.

Resolved, That we extend our thanks to the traveling men for their untiring efforts in our behalf, and assure them that we fully appreciate their support, and trust that their good will and good work will continue in the future.

Resolved, That we are unalterably opposed to the repeal or modification of the Mechanics' Lien law as it now appears in our statutes.

Insurance.

The Committee on Insurance submitted the following report:

We believe that a Mutual Insurance Company, if organized and generally supported by the Northwestern Retail Hardware Association, would be a good and safe business venture, and we would recommend that the president of this association be elected a committee of one to co-operate with the representation of the other Northwestern State organizations in working out a plan to be submitted to the different State organizations for approval at their next annual meeting.

Officers for 1899.

The election of officers for the ensuing year resulted as follows, Messrs. Kelley, Barnes and Joy being re-elected:

President, Clark W. Kelley, Devil's Lake.
Vice-President, H. B. Allen, Jamestown.
Treasurer, H. N. Joy, Hamilton.
Secretary, C. N. Barnes, Grand Forks.

EXECUTIVE COMMITTEE.

H. T. Helgesen, Milton.
N. Halverson, Northwood.
C. A. Reinhardt, Grand Forks.
P. L. Pritchard, Fargo.
H. F. Stehlon, Casselton.
C. B. Cook, Gardner.
J. L. Gale, Hunter.

The Next Meeting.

It was decided to hold the next annual meeting at Fargo, when the sessions will continue for two days instead of one day, as in the past.

What is a Carload?

THE following inquiry comes from a well-known house in this State, and, in view of the practical importance of the question to which it relates, in the present condition of the market especially, is of general interest:

Kindly inform us what among the trade is considered a carload of Nails. This question at present is rather interesting. For instance, a quotation on a carload of Nails is asked for and is given by the carload. An order for a carload is sent and accepted by the manufacturer. All this correspondence mentions the carload and does not make mention of number of kegs. At the proper time specification for a maximum carload (600 kegs) is sent, but is refused by the manufacturer who claims that 300 kegs is the limit.

A Hardwareman in the Hawaiian Islands.

WE have received an interesting letter from C. S. Shanklin, who has recently been making a trip for the Chicago Spring Butt Company to the new possessions of the United States in the Pacific Ocean. Mr. Shanklin writes from Hilo, in the Hawaiian Islands. We quote as follows from his letter: "I wish that you could have sat with me on the piazza of my hotel last evening and enjoyed one of the famous Hawaiian moonlights, for I think that if you did you would in your first issue strongly advise the many Hardware pilgrims to abandon the struggle to emigrate to this perfect haven of rest, where one can slide down the hill lazily in place of bumping down, as our fraternity have been doing for many years past." He expects to sail from Honolulu for San Francisco in the latter part of this month, reaching Chicago some time about the middle of March. From a copy of the *Hawaii Herald* of Hilo, transmitted by Mr. Shanklin, we learn that he has been so impressed by the advantages presented there for coffee growing that he has purchased a plantation consisting of 200 acres at a price of $25,000. He has 26 acres of trees six years old, from which he expects to secure a fair crop immediately. The paper characterizes Mr. Shanklin as a coffee baron, by which title, we presume, his old friends in the trade will greet him on making his usual rounds.

Minnesota Retail Hardware Association.

WE give below some interesting papers read at the recent St. Paul meeting of the Minnesota Retail Hardware Association, reserving others for publication as soon as the pressure on our space will permit.

A National Hardware Association.

The question as to the feasibility of organizing a national association was discussed both in the meeting and in informal conversation among the members. It is recognized as exceedingly desirable, and perhaps essential to the full carrying out of the plans of the association, that the organization should be national or as nearly so in its scope as possible. The opinion, however, seemed to prevail that the time has not yet come for forming such an association, in view especially of the fact that a great many States have not yet effected any organization, the opinion being that it would be better to make the Northwestern Association, which already comprises three States, the nucleus of an organization representing the West and Northwest as fully as may be, and preparing the way for one which shall be broader in its scope, including, perhaps, ultimately the whole country.

The Secretary's Work.

J. W. Clark, the efficient secretary of the Minnesota Association, and also of the Northwestern Association, whose report was given in our last issue, exhibited an interesting map, showing the towns in which the State association is represented in its membership. This was accomplished by means of seals attached to a large map of the State, indicating the location of towns in which the association members reside. The representative character of the membership was thus efficiently brought out.

Jobbers' Entertainment.

On Wednesday evening a thoroughly enjoyable entertainment was given by the Minnesota jobbers. It was a smoke sociable in the rooms of the St. Paul Commercial Club. It was largely attended, and made a very pleasant impression on the members.

ORGANIZATION AND MEMBERSHIP.

The following paper by Jas. E. O'Brien, the president, was read and listened to with especial interest, as giving considerations and suggestions relative to the work of the organization not only in the State, but also among the trade at large, with the ultimate view of forming a national association:

Mr. President: I am expected to deal with the subject of organization and membership in this discussion.

FUNDS NEEDED

Naturally enough, at the outset the question is presented, "Have we accomplished anything during the period that has elapsed since the formation of this organization?" In this respect I will say that I have watched the dollars of the few perform more service for the many by this system we have inaugurated, involving a strict observance of our by-laws, than I have ever before witnessed. In enforcing the rules laid down by this organization, many obstacles arise that hamper and harass the member that contributes his time to the prosecution of this work on the Executive Committee, and chief among these is the absence in sufficient quantity of that very essential lubricant that would cause this apparently perfectly working machine to perform the tasks set aside for it in a thorough and satisfactory manner; and to relieve this temporary embarrassment, means should be devised to increase the income of this organization, either by raising the annual dues or making a more strenuous effort to increase the membership.

EFFORTS LIMITED TO THREE STATES.

Being limited, as we are, to the three States embracing the Northwestern Association, it is my opinion a much larger expenditure of money per capita is required than would be necessary with a more extensive organization, including in its influence and scope a large number of States and performing its duties under a national organization. This latter condition I am pleased to note is being consummated as rapidly as could be expected, considering the different views held in the many localities and States as to which is the best method of surmounting these difficulties and overcoming the dangers that confront our business interests.

LIVE AND LET LIVE.

To our sister States I believe I have the indorsement of this convention in saying that Minnesota will meet the representative Hardware dealers of other States on grounds as broad and as liberal as the principles of "live and let live" that we represent, and agree upon a policy that will bring to a successful conclusion this great work only just begun.

TO THE IMPATIENT MEMBER.

To the impatient member I wish to say that the subjects we are organized to deal with are not selfish, as some of the paid publications of our opponents would have people believe. Our aim is to populate and build up cities and local trade and market places, thereby creating a local demand for the produce of the farmer and adding materially to the taxable wealth of our State. Our opponents aim to concentrate business, place it in the hands of the few, wipe out the local market place and destroy a large percentage of the taxable wealth of the State. In dealing with questions of such great moment and concern only broad and thoughtful ideas must guide our deliberations. We must be conservative and just in our rulings, and as all large bodies move slowly and with great care when successful, his grievance will in its turn receive consideration and be ruled on in proportion to the merits it presents.

EXPENSIVE METHOD OF COLLECTING DUES.

During the past year your committee has found it necessary to have the secretary call on several of the members at their places of business in different parts of the State, for the purpose of collecting the annual dues; and while it is true that nearly every member made prompt payment on presentation of claim, this method of gathering necessary funds represents a wasteful expenditure of money that might have been used in other channels and perform great good for the organization.

DON'T WAIT TO BE DUNNED.

I wil venture to say that it would require 50 per cent. of the annual dues of this organization to pay the expenses entailed by this method of collecting them. It is customary for a successful business man to keep a memorandum of what his duties are from day to day, especially so when there is from 1 to 5 per cent. involved. It should be no trouble, but rather a pleasure for him, when he turned to the memorandum of duties that devolved upon him on the seventh day of February each year, to note in that list the very important obligation he was expected to carry out by remitting to the secretary of this association the amount of his annual dues, and saving thereby 50 per cent. on his investment.

THREE GRADES OF MERCHANTS.

In Minnesota a large percentage of the men engaged in the Hardware business are successful and substantial business men. They represent force in many ways, and not the least of this push and energy is displayed by the manner in which they have the reputation of conducting their business. We have also a small percentage of the "I-don't-care" kind of business men. They are indifferent as to whether an organization whose efforts are directed for the general good of the trade is successful or not; they believe they are victims of circumstances,

and are willing to pass out of business and existence with those depressing thoughts occupying an uppermost place in their minds. We have still another kind, a very few, they know it all; they cannot learn anything; and for this particular class my sympathy goes out in abundance.

AN OFFER.

To show them or any one of them that my best feelings are with them, I will make them an offer to pay their expenses to the headquarters of this association if I do not send them back to their business with a copy of our constitution and by-laws, and a membership in this organization paid for by themselves, after they have spent a day with me in reviewing the interesting documents in the secretary's office. For, gentlemen of this convention, there is evidence in abundance of the worth of this organization to its members on file in that office.

GET TOGETHER.

Let us get together and be friends; that is the watchword of the successful business man. He uses the press and other channels of advertising to accomplish that end, in attracting the trade to his place of business, and when they reach there he wins their friendship by courteous treatment, honest goods and reasonable prices. He uses an organization of this kind, through which he can form the acquaintance of his competitors in the same town; and this getting together of competitors makes it possible for them to walk on the same sidewalk and in the same direction, in the same town, at the same time; the monster disappears and the friend takes his place.

COMPETITORS IN A NEW LIGHT.

He soon realizes that his competitor is working his way in the world through the same honorable channel that he himself is, and is not as bad a fellow as he appeared to be when they used to take opposite sides of the street rather than meet, and have their regular tilts wherein both of them received the worst of it; yes, they get together in this organization and are friends; they realize that no one person can do all the business while he has a competitor in the same town. They bunch their orders to save freights and reduce the cost of merchandise, and extend courtesies to each other that are commendable and of mutual benefit. There is no reason why fraternal feelings cannot occupy the same exalted place in the business that they do in the social world.

In conclusion I renew my former prediction that it is only with similar organizations to the one that we have in this State, in numerous other States, that the chief evils that we are organized to contend with will be effectually and fully removed.

LOYALTY TO THE ASSOCIATION.

By the time the last paper on the programme, that by S. M. Davis of Minneapolis, was reached, the hour was late, but the interest of his able paper and the effective way in which it was presented held the close attention of the members and made a fitting close to an exceptionally interesting session.

And what is loyalty? Is it being faithful to a cause or principle, devotion, fealty, allegiance? Well, these words are synonymous in expressing the general idea of fidelity to the "powers that be." Allegiance is an obligation to a ruling power. Loyalty is feeling or sentiment toward such power. Loyalty is a warm hearted feeling of fidelity and obedience. Such I believe should be the attitude of every member of this association. Your presence here shows allegiance; is an indication of how you would vote, but are we patriots only while at the polls?

THE KNIGHT OF THE GRIP.

When your place of business is invaded by the sleek young duck of many "side lines," or the more pretentious, not "Knight of the Grip," but of many trunks, apparently the whole thing—either of whom having been posted by Dun or Bradstreet as to the desirability of booking an order, do you ascertain the standing of his house with this association? Whether or not it is considered a popular firm to do business with? If you find the house is waning in popularity, do a little missionary work; urge the "Knight of the Grip" or "the whole thing" to appeal to his house to treat with the legitimate trade only, since mutual good must come from such an alliance. Hang your order on the spindle; give the knight time for reflection; also time to wire his house for instructions. You are loyal to your town or city. The hotel will thrive while he stays; also the post office and sundry other places.

OFFENDING JOBBERS.

I believe we have the log book for a week of one drummer thus afflicted. His house has become quite popular again. Brethren, you must do these things if you would bind together, strengthen and make more effective our growing organization. There is no question as to the advanced position reached the past year. Some of you may not appreciate the power we wield, but you will, if willing to accept the testimony of one who has seen various correspondence, been called upon to intercede in behalf of semi-unpopular firms, listened to the detectives' reports on shipments of goods made by double-faced jobbers or manufacturers to stool pigeons at country cross lines, who forwarded them to concerns in the Twin Cities who claim to own and sell the earth, and after weeks of delay these goods finally reached customers of some of the dealers before me.

AGGRESSIVENESS.

The influence of all such forced transactions is helping solve one of two propositions—viz.: Either the houses that catalogue everything on land or sea or in the bowels of the earth, and have in stock not a tithe of either, will be obliged to carry the stock and pay taxes on the same to satisfy their trade, as you do in your respective localities, or the heretofore shortsighted patrons of such houses will turn from the error of their ways to their home merchant, where they can examine goods before purchase, and take home the article bought, and indirectly build up their town, thereby adding to the value of their broad acres and lessening their burden of taxation.

PULLING TOGETHER.

Don't be tempted by a slight financial gain (which may be only temporary at best), and thereby throw overboard the weight of your influence on behalf of the principles of this organization. Let no jealousies arise between competitors that shall lessen your influence as a member of this association. Bury the hatchet and make all things win for the common good. You've a right to be suspicious of the pretensions of some of the Knights of the Grip. Verily they are not all lambs in wolves' clothing. Now and then one will meet your objections to placing orders with him by stating that John Slack down the road bought a big bill of him. He is a member of the association, but he doesn't turn down a good thing for any association.

INCREASE THE MEMBERSHIP.

Stop! don't swallow this whole. Perhaps John Slack isn't a member of this body at all, though he ought to be, and likely would be were he not so slack. Again, perhaps the good thing he suggests only exists in his mind, and if you should prove disloyal here, at the next town this same wolf would make a laughing stock of you and ridicule the association. This is not an overdrawn picture, but one from real life. The fact of the matter is, gentlemen, the experiences of the past year, the numerous strange transactions, the singular situations make more forcible than ever the urgent demand that every Hardware dealer in the country should stand elbow to elbow as do the North and South in a common cause.

CHOOSE EFFICIENT OFFICERS AND SUPPORT THEM.

Select good officers to serve you and then trust them to carry forward the work of the year. Give them the weapons of war. Pay your dues promptly. Be loyal to your generals. Don't rest until every dealer in your

town and county is enrolled as a member, and if you now and then find one so selfish, his soul so small, that in these patriotic times he could be justly charged with being willing to receive any and all benefits sought or gained by trade organization without paying the fee, set him down as one who in '61 would have fled to Canada to escape the draft, having refused to volunteer or procure a substitute. He wouldn't shed blood for his country's sake. There isn't a drop of blood in him. Simply hidebound by his own selfishness. Stone blind by virtue of his deformity, he is the guy of every man of generous instinct.

POWER AND INFLUENCE OF HARDWARE TRADE.

You cannot measure the influence and power of the Hardware trade of the country when once they act as a unit and every man is loyal to his convictions. This would be presuming that every dealer in the United States was enrolled as an active agent for the promotion of the general welfare of the trade—too much to expect at this writing. So also, as an answer to a few of our would-be friends, but real enemies of the worst kind, carping and finding fault because this association does not fathom all the depths of trade deceit, reach out and crush with one blow a commercial interest the product of hard times and mistaken hypothesis, or soar to such hights of visionary schemes for the alleviation of trade ills suggested by some who could no more diagnose the case than prescribe a remedy that would cure the disease without killing the subject.

WHAT IS POSSIBLE.

Like the appendicitis cases of the present day, operation declared successful. Bulletin two hours later: Patient dead. Be reasonably content with the success of the past year, and reflecting on what it might have been had every dealer been interested and loyal, go in for expansion, raise your army to a war footing, equip every man with smokeless powder and a Krag-Jorgenson, insist upon having gentlemen in your army, duplicate some Deweys and Roosevelts for leaders, leave off the bill of fare the whiskered beef of the mossback, fossilized variety, also that treated with embalming fluid of the Egyptian mummy or dry rot inactivity class, and substitute good horse sense and condensed, sterilized loyalty, and you can command the whole United States for asking, including "Gomez Land," or Aguinaldo's cane brakes, in true military style.

A Call for a Hardware Association in Missouri.

A PRELIMINARY meeting of retail Hardware dealers of Missouri was held at the Midland Hotel, in Kansas City, Mo., on February 15. J. W. Poland of Carrollton was elected chairman and E. Thomas of Trenton, secretary.

It was decided to call a convention of the retail Hardware dealers of the State of Missouri, to be held April 11 and 12 next, at St. Louis, with the object of perfecting a State organization.

On motion, J. W. Poland, G. A. Easterday, I. D. Cottey, B. F. Naylor and E. Thomas were appointed a committee to promulgate and issue the call.

Mr. Poland was appointed a committee of one to make the necessary arrangements for the convention.

The Call.

The following is the official call for the meeting:

KANSAS CITY, MO., February 15, 1899.

Nearly every Western State has now an association of retail dealers in Hardware and Stoves. It is considered desirable that Missouri should also have such an association, the advantages of which are so great in these days of close competition that it hardly admits of argument.

A preliminary canvass has been made of a number of dealers in this State and the replies have been so favorable that it has been concluded to issue this call for a meeting. At a preliminary meeting held in Kansas City, February 15, this committee was appointed and authorized to issue a call for a first meeting.

Now, therefore, in accordance with such authority, we hereby call a meeting of the retail dealers in Hardware and Stoves of the State of Missouri, to meet at the city of St. Louis on April 11 and 12, 1899, for the purpose of organizing a State association.

The undersigned committee feel that it is of great importance that this initial meeting should be a decided success, and every retail Hardware dealer in the State is urged to make a special effort to be present and assist in the organization of this movement, which will undoubtedly be of much benefit to every dealer in the State.

Reduced rates on all railroads and hotel rates will be secured for the occasion, which will be announced later on.

J. W. POLAND,
G. A. EASTERDAY,
I. D. COTTEY,
B. F. NAYLOR,
E. THOMAS,
} Committee.

Retail Hardware Association Matters in California.

FROM A SPECIAL CORRESPONDENT.

THERE is some talk among the retail Hardware dealers of Central California of forming an association similar to the Retail Hardware and Implement Dealers' Association of Northern California that was organized at Marysville on January 7. The northern association has a membership of a majority of the dealers in that portion of the State north of Sacramento. Thirty or 40 good sized towns are represented in the organization by substantial firms.

The Central Association.

The proposed central association will probably have a larger membership than that of the northern, owing to the large extent of country that will be included in the territory. This association will probably include towns south of Sacramento through the San Joaquin Valley to Bakersfield and the coast counties through the Salinas Valley and foot hills.

Jobbers Selling to Consumers.

The trade throughout this portion of California, like their brothers of the north, claim to have been unjustly treated by the jobbing houses of the State, which have for many years past practiced indiscriminate selling to the consumer in the territory claimed as rightfully belonging to the retailer, and the principal object of the proposed association is to put an end to this abuse of the retailers' rights as well as to bring dealers together to exchange ideas and devise ways and means of improving the general Hardware trade of the State.

Jobbers Conciliatory.

The majority of the jobbers are in accord with the retailers in this movement and will give them their hearty support. The expense and trouble arising from selling goods direct to the consumer have been so great that the change will be a welcome one. The jobbers advance the argument that while they are willing to set aside this custom they feel that in so doing the retailer should be willing to give something in return, and that "something" is to confine their purchases to California jobbers.

Buying on the Coast.

The retailers say they are willing to give this in exchange for the jobbers' sacrifice, providing that prices are regulated to conform with those of the Eastern wholesaler, which have been lower in many cases than those of local jobbers.

If the practice of buying goods in the Eastern markets can be stopped, the California jobber will feel that while these associations are formed for the protection of the retailer against him, he is being directly benefited.

An Old Problem.

For years the California wholesalers and manufacturers have been trying to bring about some means by which the retailer would be compelled to confine his purchases of stock to the local market. The general jobbing trade of San Francisco even went so far some months ago as to petition the railroad company, asking them to advance freight rates. This would have a tendency to stop dealers buying less than carload lots in the Eastern market and throw the trade to the local jobbers.

In view of this fact, the Eastern wholesalers granted a freight allowance that brought prices to their former level, and the local wholesalers found that the scheme had failed, the railroad company being the only party gaining by the move.

If the forming of these associations is the means of directing a portion of the trade that goes East into California channels, the most sanguine hopes of the local jobbers will have been realized.

Sportsmen's Exposition.

THE Fifth Annual Sportsmen's Exposition will be held in the Madison Square Garden, March 2 to 15, inclusive, except Sundays, under the auspices of the National Sportsmen's Association. Among the features this year will be a series of tournaments, one of which will be a grand championship rifle match for a large variety of prizes, ranging in value from $50 in cash down. Other features of the programme will be an inanimate target tournament, with a continuous match, Sportesmen's Association championship and sweepstakes and special matches. Still another programme contemplates a series of revolver and pistol matches, with trophies aggregating in value nearly $500.

Requests for Catalogues, Quotations, &c.

THE HOCKADAY HARDWARE COMPANY, Wichita, Kan., who have just commenced the wholesale Hardware business, as noted in our last issue, are desirous of obtaining catalogues and discount sheets from all manufacturers in their line. They are providing a convenient cabinet for matter of this sort, with latest improved index system. Ed. Hockaday of Ed. Hockaday & Co., with stores at Kingfisher, El Reno and Enid, O. T., is president of this company.

G. M. Bryan, Jr., & Co. of Galveston, Texas, will in July next move two doors east into a store three times the size of the one now occupied by them. Their line now consists of Builders' Hardware, Tools and Cutlery. They will add to it Stoves, Tinware, Refrigerators and general household goods, and desire catalogues, quotations, &c.

Wells Hardware Company, Pennsboro, W. Va., who have succeeded W. T. Greer & Son, are desirous of receiving catalogues and quotations relating to Hardware, Tinware, Stoves, Agricultural Implements, &c.

The Church Mfg. Company, Pittsburgh, Pa., Fred. J. Shaler, corresponding secretary, 312 Park Building, who are intending to erect a modern plant for making complete Bolts from the raw material, will be pleased to receive price-lists and other matter relative to machinery, tools, &c.

Magill Hardware Company, Chattanooga, Tenn., owing to their increasing trade have found it necessary to enlarge their quarters, and in making the change have merged their business into a stock company with the following officers: W. L. Magill, president and general manager; J. A. Magill, vice-president; T. H. Johnson, treasurer, and S. M. Hardin, secretary. Mr. Magill, the president, has for 20 years been continuously engaged in the Hardware business in Chattanooga and is well known to the trade. As soon as the busy season incident to the spring trade is over the company will remove to the capacious building, 729 Market street and 730 Broad street, formerly occupied by Vance & Kirby, which will give them 10,000 additional square feet of floor room as compared with the old quarters.

Notes on Prices.

(*Continued from page 34.*)

Wrought Iron Pipe.—An advance has been made in Wrought Iron Pipe by which the extras beyond the base prices have been made four 10's, 7½ and 5 per cent. on carload lots, and four 10's and 7½ per cent. on less than carload lots. The market has a strong tone and the mills are very full of business.

Paris Green.—The price for Paris Green still holds at the base price of 12 cents in Arsenic kegs or casks, with the regular advances for smaller packages. The demand on jobbers' first orders is supplied to a large extent, so that manufacturers do not anticipate much business for the next month or more. The market is represented by the following quotations, which are 30-day net prices:

Arsenic kegs or casks			Cents	per	pound 12
Kegs of 100 to 175 pounds			"	"	" 12⅜
Kits of 14, 28 and 56	"		"	"	" 13⅛
Paper boxes, 2 to 5	"		"	"	" 13⅜
" " 1	pound		"	"	" 14
" " ¼	"		"	"	" 15
" " ¼	"		"	"	" 16

Glass.—The storm of last week seriously affected Window Glass production both in the Pittsburgh region and in the Indiana gas belt. Scarcity of coal in the former, the cutting off of natural gas from factories in the latter and for use in dwellings and the extreme cold in both sections which prevented getting Glass through the cutting rooms curtailed the output of Glass, it is estimated, fully 75 per cent. Shipping Glass has also been greatly interfered with. The February rebates are having somewhat of a demoralizing effect upon the jobbing trade. Locally carload lots are being offered at concessions from the regular price, whether rebates have been obtained or not. Discounts of 85 and 15 per cent. are not unusual, and even lower figures are obtainable, against 85 and 10 per cent. discount formerly asked. There is little doing, however, in carload Glass. For less than carload lots 85 and 5 per cent. discount is asked. The combine seem less anxious to sell Glass than to cause independent factories to meet prices, and to open their eyes to the advantages of giving up their independence and identifying themselves with the proposed trust. American Glass Company's prices are as follows:

Districts.	A.	B.	C.	D.	E.
5000 boxes or more	85 & 10	85 & 10	.....	.....	85 & 10
Carloads	85	85	85 & 5 & 2½	.....	85
3000 boxes or more	85 & 5	85 & 5	.....	.....	85 & 5 & 2½
1000 boxes or more	.....	.....	85 & 10 & 2½	.....	.....

These prices are subject to trade allowance.

Paints and Colors.—*White Lead.*—Another week has opened without an advance being announced in the price of White Lead in Oil. The strong position held by raw materials has led to a very general anticipation among large buyers of higher values for the finished product. Quotations are as follows: 6 cents per pound in lots of less than 500 pounds and 5¼ to 5½ cents per pound in lots of 500 pounds or over. Dry Lead is quoted 5 cents per pound in barrels.

Oils.—*Linseed Oil.*—Last week's conditions remain unchanged and Linseed Oil occupies the same strong position that it did at our last report. Crushers are not inclined to accept large orders at current prices for future shipment. Considerable Oil is moving in jobbing lots at former quotations, as follows: City Crushed Raw Oil in lots of five barrels or more, 41 cents, and 42 cents in less than five barrels. The usual 2 cents advance is obtained for Boiled Oil. Out of town brands are held at 1 cent less than the foregoing prices.

Spirits Turpentine. — The Turpentine market has gained in strength during the week under review, owing to light receipts. Southern conditions are reported as unfavorable for as large a crop as in 1898. A quiet but fair business has ruled during the week and prices are firm at 46½ cents for Southern and 47 cents for machine made barrels.

Brass Steam Goods.—In Brass Steam Goods there have been four advances in the last month and two advances

in Plumbers' Brass Goods. The impression among conservative men in the trade is that they are likely to be higher before they are lower.

Strap and T Hinges.—While there has been no change in the regular printed discounts on Strap and T Hinges, the prices of the manufacturers have been advanced from 5 to 10 per cent. in the way of withdrawal of extra discounts, &c.

Pipe Stocks and Dies.—Stocks and Dies, in consequence of advanced prices for the material from which they are made, are quoted 5 to 10 per cent. higher.

Export Notes.

DOOLEY, SMITH & CO. is the title of a new firm organized to export manufactured products in metal to Porto Rico, largely in the line of Machinery and a general line of Hardware. Mr. Dooley for 13 or 14 years was with Ogden & Wallace, Iron merchants, New York, leaving them to accompany the Naval Reserve when war broke out last spring. Since then he has visited Porto Rico and opened a branch in San Juan. Their plan is to secure a number of exclusive agencies for Porto Rico territory in lines that are most needed and push them actively, and in a general way deal in Hardware and kindred lines. They have a business office at 95-97 Liberty street, New York. Charles W. Ogden of the firm of Ogden & Wallace, 577-583 Greenwich street, New York, is a partner in Dooley, Smith & Co.

The Philippines Company, 7 Broadway, New York, have recently been incorporated for the purpose of facilitating trade relations between this country and the Philippines. They quote rates on freight, express matter and passage tickets as brokers and forwarders. In Manila, we are advised, they have a building near the Escolta (referred to as the Wall street district), in which will be exhibited samples of American Machinery and other manufactures. They have just issued for free distribution a pamphlet of 32 pages, accompanied by a map sheet 22 x 17 inches, which gives much detailed information in regard to the Philippine group.

Exports of Hardware and machinery from San Francisco at the present time are reported to be booming. Liberal shipments are being made to Mexico and Central American ports, while the Hawaiian trade is very brisk and rapidly increasing. Since the islands passed under American control the trade has increased 40 per cent. and shippers anticipate a large business in all lines from now on. Additional vessels are now plying between all parts of the islands and San Francisco, and each is fully loaded with general merchandise.

Price-Lists, Circulars, &c.

THE ADAMS COMPANY, Dubuque, Iowa: Their Hardware specialty line, including Stove Furniture, Diamond Vises, Barrel Trucks &c.

THE NORTON MFG. COMPANY, Chester, Conn.: Bits Gimlets, Reamers, Ice Chisels, Picks and Awls, Countersinks, &c.

JOHN N. HAGER, Fort Atkinson, Wis.: Hager's Fork and Shovel, Rake and Manure Hook and Improved Hoe Brackets.

KEYSTONE M. & M. COMPANY, Lebanon, Pa.: Xander Bicycles in nine models, ranging from $25 list to $50 list.

THE MCINTOSH-HUNTINGTON COMPANY, Cleveland, Ohio: Sunol, Hercules and Wizard Bicycles and Bicycle Sundries.

ELLIS & HELFENBERGER, Indianapolis, Ind: Wrought Iron and Wire Fencing for all purposes.

ROBERT C. REEVES COMPANY, 187 Water street, New York: Catalogue of Agricultural and Horticultural Implements and Machinery, Garden, Field and Flower Seeds, Fertilizers, &c.

ROBERT J. MASBACH, 117 Chambers street, New York: Spring catalogue of 120 pages illustrating a large assortment of selected goods in the way of Shelf and General Hardware, Cutlery, Garden Tools, &c., for much of which he is the manufacturer's agent.

HEYWOOD BROTHERS & WAKEFIELD COMPANY, Gardner, Mass.: Simplex Time Recorder.

C. W. HACKETT HARDWARE COMPANY, St. Paul, Minn.: Catalogue No. 126, devoted to Bicycles and Sundries.

NEW PROCESS TWIST DRILL COMPANY, Taunton, Mass.: Illustrated catalogue of Hot Forged Twist Drills, Sockets, Reamers, Wire Gauges, Cabinets for Drills, &c. Mounted sets are also shown in various assortments.

CLEVELAND FOUNDRY COMPANY, Cleveland, Ohio: Puritan Wickless Blue Flame Oil Cooking Stoves.

Trade Items.

AT the recent annual meeting of the Russell & Erwin Mfg. Company, New York, the old Board of Directors was re-elected, as follows: William G. Smythe, George J. Laighton, Louis H. Wales, Andrew J. Sloper, Frank L. Hungerford, Frederick N. Stanley, Daniel R. Howe, Robert W. Parsons, Frederick P. Wilcox.

ROBERT OGILVY, formerly Hawks & Ogilvy, wholesale dealers in Fishing Tackle, has moved back to his address of a year ago, 300 Broadway, New York, a fine new building just erected. He has the street floor and two basements, measuring about 90 x 25 feet each.

WE are in receipt from the Rhode Island Perkins Horseshoe Company, Providence, R. I., of an artist's proof, suitable for framing, of an engraving reproducing the interior of a blacksmith shop over 100 years old. The picture, which shows the smith forging a Horseshoe, is 16½ x 12 inches and is similar to their calendar head for this year.

BOWMAN BICYCLE & GUN COMPANY, dealers in Bicycles and Sporting Firearms, have moved into new quarters just completed at 300 Broadway, occupying a portion of the premises leased by Robert Ogilvy, dealer in Fishing Tackle.

THE purchasing power of money is the subject of a bright pamphlet issued by the J. D. Warren Mfg. Company, Masonic Temple, Chicago. In this pamphlet are illustrated old methods of keeping Hardware stocks in sharp contrast with the orderly arrangement invented by J. D. Warren. The comments are, however, much more striking than the comparison shown by the pictures. They are well calculated to arrest the attention and make the reader think, and think deeply, as to whether or not he is losing money by careless methods.

BRAINERD-TANNER COMPANY, manufacturers of Hardware Specialties, 107 Chambers street, New York, have been made sole agents in the United States for the various kinds of Wire made by W. N. Brunton & Son, Musselburgh, Scotland. The latter firm are manufacturers of fine high grade Wires and Rods, including Polished Cast Steel Drill Rods for twist drills, Dental Tools, small Taps, Reamers, Punches, Shafts, Electrical Appliances, Surgical Tools, Watch and Clock Makers' Borers, &c., for which importation orders are taken, the goods on a recent order having been delivered here in 17 days from date of mailing the requisition. The same concern manufacture largely Music Wire, an assortment of which is carried in stock.

SCOTT HARDWARE COMPANY, Paducah, Ky., have issued an interesting and well arranged booklet of 24 pages, envelope size, treating of the natural advantages of that territory for the location of factories, especial attention being given to the facilities for obtaining raw materials and reaching desired markets with finished product.

WM. E. PECK & CO., 100 William street, New York, have just issued No. 39 of "Peck's Buyers' Index," which is designed for foreign circulation. Articles are classified alphabetically, and in another part of the pamphlet the names of the manufacturers are given, there being a system of figures by which the two are connected.

THE little book entitled "File Filosophy," issued by the Nicholson File Company, Providence, R. I., will be supplied to any one on request. The book is being circulated widely, and in view of its practical value is received with favor by all interested in Files and their uses.

ON Friday morning, Merrill Brothers of Brooklyn suffered from a fire which destroyed the upper floor of their machine shop. The two other buildings, which contained the Turnbuckle and Vise departments, did not suffer material injury, and they are expected to resume work in them in a few days. The machine shop will be rebuilt as soon as insurance matters are adjusted. Merrill Brothers, in spite of this accident, are in a position to make deliveries of Turnbuckles and Vises.

THE statement in our last issue that the Standard Wire Company, New Castle, Pa., will remove to Sharpsville, Pa., was erroneous. The company have no such intention and will continue the manufacture of their line, including Standard Folding Steel Wire Mats, Queen Wire Jumping Ropes, and staple Wire goods and specialties, at New Castle, as in the past.

Enameled Ware Patent Litigations.

CONCERNING the litigation under the Claus patent for infringement in the manufacture of one-coated Enameled Ware, originally brought jointly by the Lalance & Grosjean Mfg. Company and St. Louis Stamping Company, it appears that the Lalance & Grosjean Mfg. Company have refused to participate in any settlement that releases the original defendants, now incorporated in the National Enameling & Stamping Company. As joint owners of this patent they are determined to press the cases and recover damages for past infringements.

The United States Circuit Court has recently required the defendant members of the National Enameling & Stamping Company to show cause why the St. Louis Stamping Company should not be removed from its place as a plaintiff and made a defendant in these suits, leaving the Lalance & Grosjean Mfg. Company the only plaintiff. It has also granted an order to show cause why all the papers, exhibits, &c., belonging to the complainants in the suits and now in the possession of their former attorneys, should not be forthwith delivered by the latter to the Lalance & Grosjean Mfg. Company.

The arguments of these motions have been adjourned to March 3, but the court has directed that all the papers and exhibits referred to be delivered to Hon. John A. Shields, commissioner, to be open, for the present, only to the inspection of the Lalance & Grosjean Mfg. Company or their attorneys. There seems to be little doubt that the Lalance & Grosjean Mfg. Company have the right to continue these litigations, and that it is their purpose to do so.

Among the Hardware Trade.

G. W. Fletcher has disposed of his stock in the Fletcher-Steen Company, Boise, Idaho, to D. M. and Geo. P. Steen, and has retired from the management of the firm.

C. A. Jack has admitted a partner in his Hardware business in Tekamah, Neb., and the firm style is now C. A. Jack & Son.

Allan J. McDonald is building a new Hardware store at Melvin, Mich. Mr. McDonald deals in Shelf Hardware, Stoves, Tinware, Agricultural Implements, &c.

Mr. Parrault has retired from the firm of Fiedler & Parrault, Bathgate, N. Dak., and Frank A. Fiedler will continue at the old stand.

J. M. Newton has succeeded Newton Bros. in the Hard ware business at Bern, Kan.

S. F. Lawrence has sold his Hardware and Implement store at Greenwood, Ark., to C. R. Owens.

The business of J. M. & J. D. Hefley, Cameron, Texas, has been incorporated under the style of the Jno. M. & J. D. Hefley Company. A wholesale and retail trade is done in Shelf and Heavy Hardware, Stoves, Tinware, Implements, Sporting Goods, &c.

George M. Woodford has sold out his business in Athens, Texas, to Miller, Carroll & Spencer, who will continue at the old stand.

Henry Claerbout has succeeded Sheldon & Claerbout at Hull, Iowa.

Evans & Richardson have opened up in the Hardware and Agricultural Implement business at Waukomis, O. T.

The Hardware store of Beachem & Williams, Nardin, O. T., was recently destroyed by fire, with a loss of $3200, on which there was no insurance. The firm will rebuild.

Wm. A. Ely & Son have purchased the business of the Purdy Hardware Company, Purdy, Mo.

The McCormick, Saeltzer Company, Redding, Cal., locally known as "The Big Store," issue an illustrated Hardware catalogue relating to Hardware, Tools, Iron, Steel, Pipe, Blacksmiths' Supplies, &c. The company are doing principally a retail business, but also do a wholesale trade, which they hope to increase through the medium of this catalogue. The book contains 325 pages of fine quality paper, bound in stiff cloth covers. For convenience the different goods handled by them are grouped in departments. The catalogue is fully illustrated and very creditable to the company. The territory covered by them includes Northern California and Southern Oregon.

H. F. Hoesman has sold out his stock of Hardware and Implements in Ellsworth, Kan., to Eldred & O'Donnell. The new firm are making a number of improvements in the store.

P. Hocker & Son, Clarksville, Texas, who have been conducting a Hardware and dry goods store, have disposed of their dry goods stock, and will hereafter confine themselves exclusively to the sale of Hardware and Agricultural Implements.

The Hynson Tool & Supply Company, St. Louis, Mo., issue an illustrated catalogue and price-list of 220 pages, devoted to extensive lines of Carpenters', Wagon Makers', Cabinet Makers', Ship Builders' and Machinists' Tools. A supplementary catalogue contains illustrations and prices of Coopers' Tools and Supplies, including the Champion Barrel Heater.

The Danville Hardware Company, Danville, Va., started in business on February 6.

Thomas F. Graham and J. Perry Josh have purchased the interest of W. H. Verian in the Hardware business at the corner of Bronson avenue and Reynolds street, Rochester, N. Y. They will continue under the style of Graham & Josh.

Reagan & Foster have succeeded F. W. Reagan in the Agricultural Implement business at Lorimer, Iowa.

A. M. Baumbach has purchased the Hardware business of Brockhoff & Holler, Wadena, Minn.

I. E. Swift Company, Ishpeming, Mich., issue an attractive calendar relating to Heavy Hardware, Mine and Mill Supplies and Lumbermen's Tools.

Spena & Keraus are successors to H. C. Street, Hardware and Implement dealer, Keeney, Kan.

L. B. Wilson has sold his Hardware business in Lenox, Iowa, to Cless Bros., who are continuing at the old stand.

G. Bantly, successor to Herman Bantly, Johnstown, Pa., has recently taken possession of his new building, Main, Bedford and Levergood streets, where the floor space of the old stand has, we are advised, been multiplied six times. Mr. Bantly handles Hardware, Builders' Supplies, &c., and has recently put in a stock of Stoves and Ranges.

G. C. Heyde has bought his brother's interest in the firm of Heyde & Bro., Marion, Ill., and will continue the business under his own name.

By mutual agreement the partnership between William Stein and E. Kubens, under the style of Stein & Kubens, Flatonia, Texas, has been dissolved. Mr. Kubens has retired and Mr. Stein will continue at the old stand under his own name.

Broadfoot & Latimer have succeeded Broadfoot, McKoy & Co., Forney, Texas The firm have lately moved from their former frame building to a good brick structure in the heart of the town. A. M. McKoy, of the old firm, has with his brother entered the Hardware business at Rockwall, 15 miles from Forney. The firm style is McKoy Bros.

McCrea Bros. & Co., Kendrick, Idaho, have purchased the Buck Building in that place and are about taking possession of it. It will double their facilities for business.

A. S. Rice, Hardware merchant at Genoa Junction, Wis., has removed to more central and commodious quarters.

T. A. Stockton, Aledo, Tex., was burned out a short time since. Mr. Stockton suffered a loss of over $1,000. He has rebuilt, and is in running shape again.

H. C. Hindman has admitted his brother to partnership in his Hardware business at Carleton, Neb., and the firm style is now Hindman & Bro.

Wylie Bros. have succeeded Housewright Company at Wylie, Texas, dealers in Implements, Buggies, Wagons, Harness, &c.

Miscellaneous Notes.

Hay Tools and Hardware Specialties.

The catalogue of the Janesville Hay Tool Company, Janesville, Wis., deals principally with Strickler's dead lock hay carriers, with single or double tracks. Interesting features in connection with these hay carriers are the trip blocks, which enable a load to be easily discharged in a barn, and the dead lock hay slings for facilitating the unloading of hay from wagons. The slings are placed on the wagons when going to the field preparatory to taking on a load. They can be adjusted to fit any rack in length, and have a trip lock at the center of the slings, so that when the load is elevated in the barn the lock can easily be tripped, which separates the sling into two parts, letting the hay drop out between them perfectly clear and spreading out in exactly the same shape as it lay on the wagon.

Klondike Sample Holder.

The Klondike Sample Holder, manufactured by N. M. Brinkerhoff, Gibsonburg, Ohio, is now offered in two sizes. No. 1, made from 18-gauge wire for small articles, and No. 2, made from 15-gauge wire for heavy samples. Mr. Brinkerhoff reports sales very encouraging, orders coming from all over the United States and several from foreign countries.

Eagle Horse Shoe Company.

The Eagle Horse Shoe Company, South Milwaukee, Wis., have issued an exceedingly handsome publication, illustrating their method of manufacturing. Views are given of different departments of the rolling mills and factory, and a most interesting narrative accompanies them, telling the whole story of making Eagle Shoes. Seventeen illustrations are necessary for the purpose, all of them reproduced from photographs. They are followed by illustrations of the different patterns of shoes made. The work comprises 46 pages, and is so artistic in all its details that it will be carefully preserved by those who are favored with copies.

New Sheave.

Wilcox, Crittenden & Co. of Middletown, Conn., manufacturers of Ship Chandlery and Awning Hardware, invite the attention of the trade to a new style of Patent Sheave which they have just brought out. The striking feature of the invention, it is stated, is the reduction of friction to a minimum by the successful application of the ball bearing principle. Two rows of balls are used in each sheave. The balls are made of cold rolled steel and revolve noiselessly and without friction on the hardest gun metal casings. Thorough practical tests covering long periods have already been made, we are advised, and it has been demonstrated that in the case of blocks fitted with the ball bearing sheaves a heavy load can be carried with comparative ease. In connection with the durability and noiselessness of the sheaves the manufacturers call special attention to the saving in labor secured by their use.

Heavy Milk Cans.

Frank Sturges, Chicago, Ill., successor to the Chicago Stamping Company, is manufacturing a line of Milk Cans, a leading feature of which is the improved quality and extra weight, with more heavily soldered seams. This line of goods, we are advised, is made from thoroughly annealed steel, heavily tinned, and is designed to stand hard usage without cracking or leaking. An improved handle is used which prevents cut hands and raw edges. Attention is called to the fact that this concern are not identified with any consolidation, and are in a position to quote interesting prices.

Automatic Chemical Ejector.

New York & New England Sanitation Company, 150 Nassau street, New York, have put on the market the automatic chemical ejector shown in the accompanying engravings. This device is designed to automatically sterilize water closet bowls, urinals, traps and pipes in private or public buildings every time the tanks are emptied and bowls flushed. Fig. 1 shows the ejector as it appears in regular form, the glass receiver being charged with a purple tinted crystal chemical germicide called sulphozyl, which is prepared from a formula of their own. The apparatus consists of a transparent glass reservoir 4 inches long and 2½ inches in diameter, with a nickeled

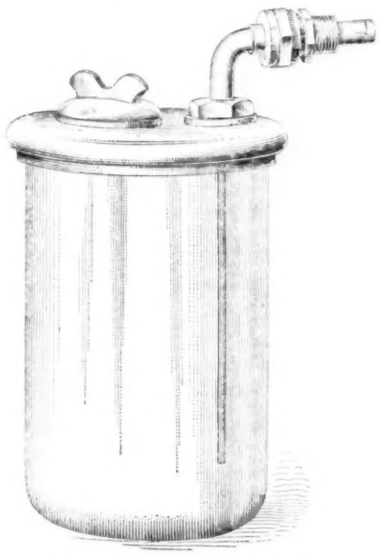


Fig. 1.—Automatic Chemical Ejector.

brass top and two tubes, one within the other. One end of the tubes is inserted in the flush pipe a few feet below the overhead tank, and the other extends into the glass reservoir containing the germicide, the arrows indicating the direction of the current. Every time water is withdrawn from the tank above a portion passes through the outer tube into the reservoir and passes out again through the inner tube, carrying with it the dissolved chemicals back into the flush pipe and then into the bowl and traps beyond. By this method the closet receives a portion of the sterilizing chemical every time it is used. The action is automatic and the device requires attention only a few times a year, when the glass is to be refilled with sulphozyl. The chemicals are odorless and the flushings colorless, the company adding coloring matter to the chemicals in the reservoir when demonstrating the action of the ejector. When tapping into lead flush pipes a nickeled brace or support is used, which spans the pipe and supports even the moderate weight of the ejector, this not being necessary where pipe of harder metal is used. Fig. 2 is a sectional view showing the method of attaching the ejector to the flush pipe.

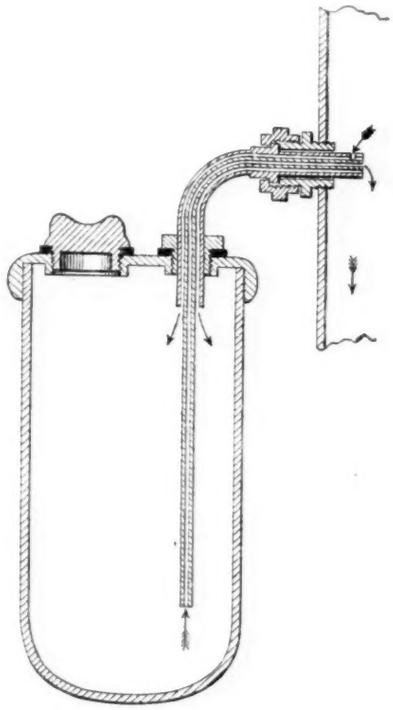
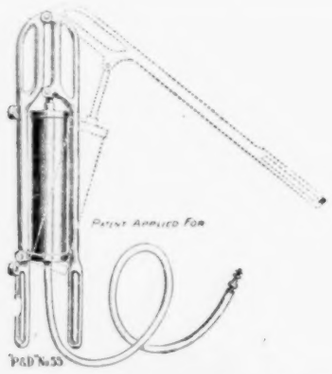


Fig. 2.—Sectional View of Ejector.

Hand Lever Cycle Pump.

Peters & Drake, 107 Chambers street, New York, manufacturers of bicycle pumps and accessories, have put on the market a series of pumps, of which the example here shown is typical. This is a hand lever pump, which can be used detached or affixed to wall, bench or any suitable support. The bar frames and handles are malleable iron, japan finish. An important advantage referred to is that the leverage on the piston rod increases as the resistance on the piston increases, thus securing the powerful leverage of the toggle joint principle as the piston finishes its stroke. The cylinder is 2 x 8 inhces, nickeled, fitted with



Lever Pump for Detached or Wall Use.

ball valve and 3 feet of rubber tubing. The air capacity per stroke is 25 cubic inches. Another pump for the same purpose, somewhat similar in construction, has a cylinder 1½ x 10 inches and capacity of 17 cubic inches at each stroke, while still another, to be fixed permanently to some suitable support, has a cylinder 3 x 6¼ inches and a capacity of 38 cubic inches.

Bridgeport Bicycle Pumps.

Bridgeport Brass Company, 19 Murray street, New York, have put on the market a series of bicycle pumps

Fig. 1.—Bridgeport Bicycle Pump.

Fig. 2.—Spring Expander in Plunger.

in both brass and aluminum, as here illustrated. The cylinders are all 1¼ x 12 inches in dimensions, and the pumps are numbered 1, 2 and 3. The peculiarity of these pumps is the patented expander in the plunger, as shown in Fig. 2, which consists of a tempered sheet brass spring with guides, by means of which the pump leather is automatically kept close to the inner wall of the cylinder to prevent a needless escape of air at the top. Pump No. 1 has an aluminum cylinder with cast aluminum foot and is very light. No. 2 has a polished and nickeled brass cylinder with nickeled cast foot and No. 3 has a polished and nickeled brass cylinder with cast aluminum foot.

The Tyler Weaners.

Illustrations are herewith given of the Tyler Halter Weaner and Tyler Safety Weaner, now offered to the trade by the Wm. E. Pratt Mfg. Company, 89 Lake street, Chicago, Ill. The Halter Weaner, as shown in Fig. 1, does not go into the nose, but is put on the same as a halter. A double side loop down the side of the mouth prevents any part of the mouth from being used for sucking. The lower end of the halter is made of heavy wire instead of leather, which is liable to be quickly decayed by getting wet with dew. The front

Fig. 1.—Tyler Halter Weaner.

Fig. 2.—Tyler Safety Weaner.

plate is made of galvanized iron and the straps are of oil tanned leather. The Safety Weaner, shown in Fig. 2, has no sharp points to injure an animal, and does not go through the nose to make it sore. The blab or plate swings on the bolt. The two front prongs prevent the plate from being thrown over the nose. This weaner also has protecting loops on the side.

Improved Cycle Chain Adjustment.

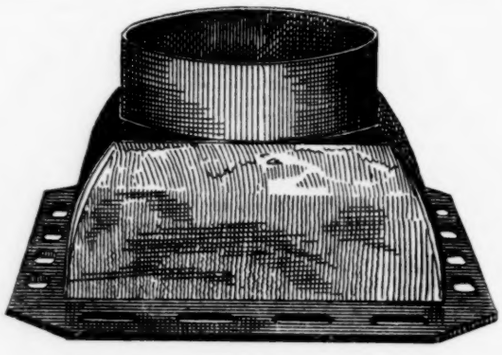
National Cycle Mfg. Company, Bay City, Mich., are using an improved form of chain adjustment as here illustrated. To effect an adjustment of the chain, the

National Cycle Chain Adjustment.

rear axle nuts are loosened and the scrolls turned backward or forward on the teeth. In this way the wheel is lined up in the frame and parallel bearings secured quickly, without necessitating expert skill or much care.

Everlasting Chimney Cap.

James Woodside, Hawarden, Iowa, has put on the market the Everlasting chimney cap, here illustrated. The cap of cast iron measures 12⅛ x 15 inches across the bottom, including flange, and weighs 12 pounds. At the top



Everlasting Chimney Cap.

is a 7-inch collar, to which common round pipe may be fitted if found necessary to extend the chimney. The cap is designed to cover the top of a brick or stone chimney, being held in position by cement, thus not only protecting the upper courses of brick from the elements but inducing often a better draft by closing up a part of the opening. Being of a substantial character it is stated it does not need to be renewed.

Millers Falls Nail Puller No. 3.

Millers Falls Company, 93 Reade street, New York, are making the Millers Falls nail puller No. 3, here illustrated. It is 20 inches long when not extended, and being partly flat will not roll when laid down. The working parts seen in Fig. 2 are forged from steel of the best stock and carefully tempered. On the upper end of the iron ram is a polished hardwood handle 4¼ inches long, on the top of which, but not shown in the cut, is a stout iron cap for driving nails, as is frequently desirable when a hammer is not available.

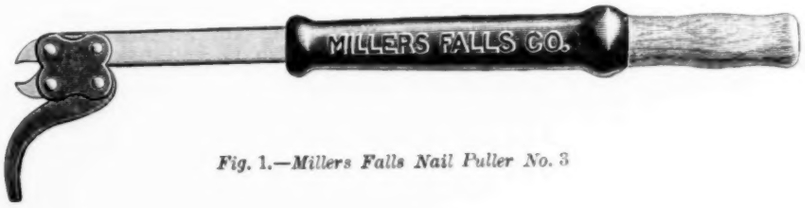


Fig. 1.—Millers Falls Nail Puller No. 3

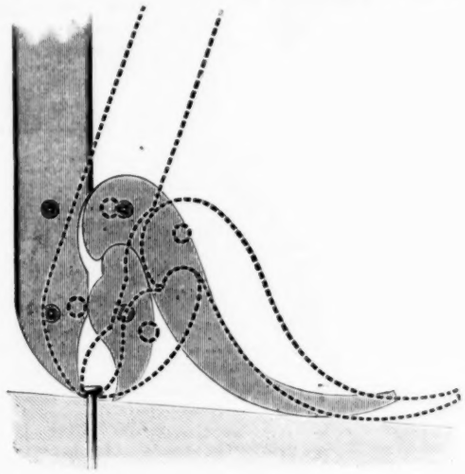
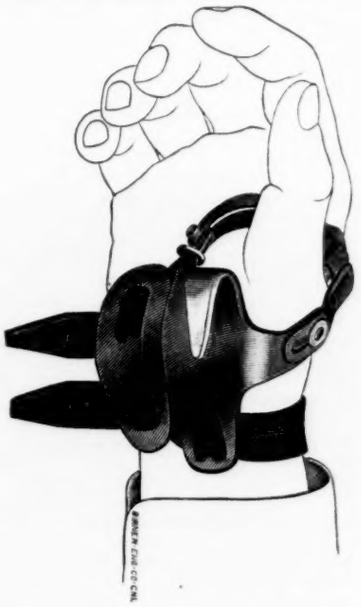


Fig. 2.—Exposed View of Working Parts.

The Wilcox-Lillie Adjustable Corn Husker.

The Wilcox Mfg. Company, Aurora, Ill., are manufacturing the new adjustable corn husker which is herewith illustrated. The principle of the husker is referred to as an entirely new departure in the line of husking devices. Being adjustable, it can be fitted to any man's hand, either with or without a glove, which insures ease and comfort to the wearer, so that his hand will never become sore from its use. It also protects the hand from cuts and the wrist from sprains. As it husks an ear with one pass, while the ordinary husker requires two passes, it saves half the labor. The materials used are the best quality of cold rolled steel and raw hide lace leather.



The Wilcox-Lillie Adjustable Corn Husker.

The Lane Elevator Door Hanger.

The accompanying cuts illustrate a new style of hanger which Lane Brothers Company, Poughkeepsie, N. Y., are just placing upon the market. It is designed especially for use on passenger elevator doors. The manufacturers remark that at present hangers for this purpose are usually selected from some of the numerous styles of parlor or house door hangers, which they claim are not well suited for this use for various reasons. One of the most potent causes of trouble, it is explained, is the fact that the loose or adjustable parts of the hanger wear abnormally on account of the slamming of the doors. From Fig. 1 it will be seen that the hanger has a solid steel frame that has no joints or loose parts, and it is fitted with a ball bearing wheel. Particular attention is called to the great amount of use to which such hangers are subjected and the necessity of thorough durability. In Fig. 2 is shown a sectional view of the wheel and bearing used in the hanger, which is the same as that supplied with the company's ball bearing parlor door hanger. It is claimed that the cups, cones and balls are made in the best possible manner. The track is supported at the ends only, to reduce to a minimum the work connected with erection. The adjustment is accomplished by means of the track.

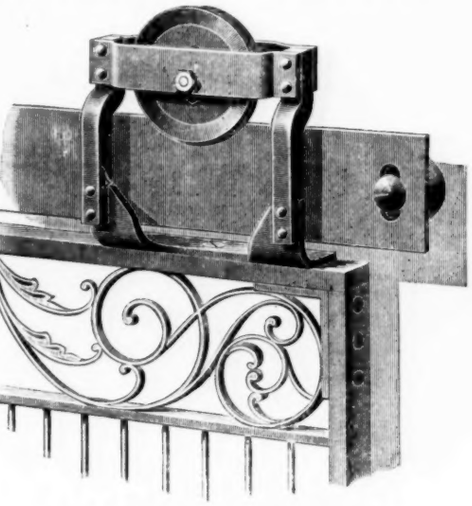


Fig. 1.—The Lane Elevator Door Hanger.

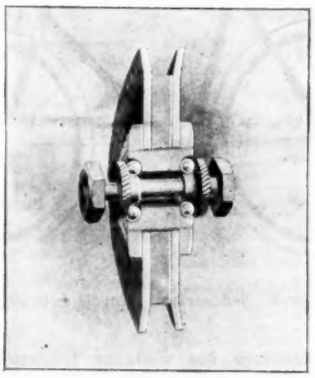


Fig. 2.—Sectional View of Wheel and Bearing.

Fiber Seaming Cord.

R. E. Rodriguez, 91 Chambers street, New York, is marketing the Fiber seaming cord, here illustrated. It is used principally by upholsterers for carriage trimming, such as forming welts on carriage seats, &c. It is very smooth, even and free from knots, has a natural color and

Fiber Seaming Cord, Sample Form.

is stainless, so that it can be used with light or delicate fabrics. It is put up in the shape illustrated for sample purposes. Commercially it is put up in several forms, one of which is on reels holding 30 and 60 pounds.

Wolff-American Chainless Bicycle with Sager Gear.

R. H. Wolff & Co., 118th street and Harlem River, New York, are using the Sager gear in connection with their chainless bicycle, as here shown. The device is described as a roller gear, revolving in direct line contact

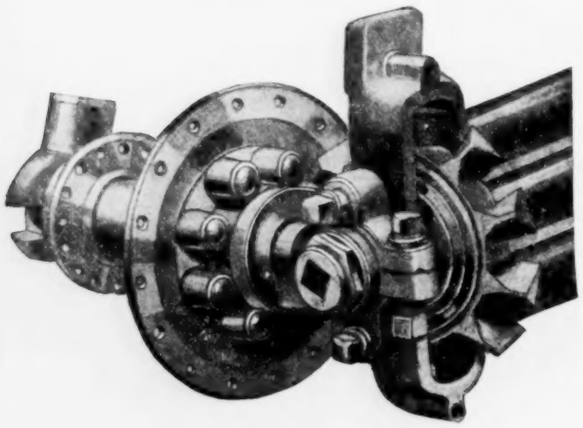


Fig. 1.—Rear View of Sager Gear Exposed.

with the curved surface of solid cut teeth, thus giving but the friction of a roller, while at the same time the teeth are in contact with the rollers throughout their entire length. This affords an abundance of wearing surface and avoids to a great extent end pressure in the bearings. The Sager gear having a gradual inclination

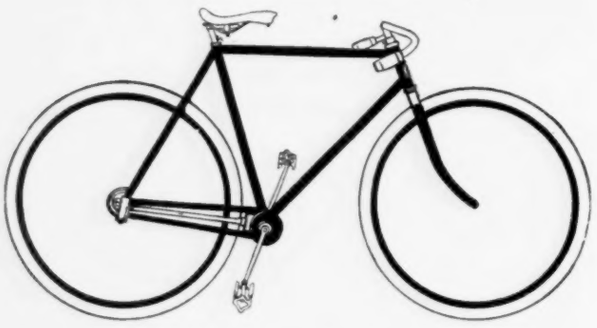


Fig. 2.—Wolff-American Bicycle with Sager Gear.

of tooth overcomes the wedging tendency. A distinct advantage claimed for this form of gear is that it is not a delicate mechanism that riders must necessarily let alone as they would the movement of their watch. It can be adjusted, it is claimed, as easily as a chain. The manufacturers call attention to the fact that this gear without casing will run more freely in mud or dirt than chain mechanism, although the gear covering should be fitted to it, as it keeps the rollers and teeth entirely clean, reduces wear and makes it possible to lubricate freely. The upper and lower tubes shown in Fig. 2 are only to give strength and rigidity to the frame, the gear shaft operating between them. This company also make a full line of single and duplex wheels, the former in roadsters and racers.

The owner of the building in which H. A. Uehren's Hardware and Sporting Goods store at Aurora, Ill., is located is remodeling and enlarging the block. The building is being extended back to Middle avenue, will be three stories high its entire length, and will have a strictly modern vestibuled front. Mr. Uehren will occupy the entire building, and will thus have splendid facilities for the display and accommodation of his large stock and the handling of his increasing trade.

CONTENTS.

	PAGE.
Copper Plating Vessels. Illustrated	1
Calcium Carbide and Acetylene in Factories	3
The Diamond Spike. Illustrated	3
Cotton Tie Rolling Record	3
Malleable Cast Iron.—II	4
The New Works of Beaman & Smith. Illustrated	6
The Excess of Imports in Great Britain	6
Seasoning Wood by Electricity	7
High Explosives in Guns and Shells	8
Trade Conditions in Mexico	10
Western Foundrymen's Association	10
The Dodge Capillary, Chain and Ring Oiling Bearings. Illus	11
A New Balance	11
The Hyatt Roller Bearing. Illustrated	12
The Eight-Hour Labor Bill	13
The Hartford Water Motor Pump. Illustrated	13
The Keegan Charges	14
The Week	14
The Plan of the Paris Exposition	15
Canadian News	15
A Scrap Iron Trust	16
Editorials:	
Failure of Shipping Bounties in France	17
Chicago Pays Riot Damages	18
Limitations of Frontier Manufacturers	18
Obituary	18
The Navy Appropriations	19
Personal	19
New East River Bridge Bids for Towers and End Approaches	19
Manufacturing:	
Iron and Steel	20
Machinery	20
The Iron and Metal Trades:	
A Comparison of Prices	21
Chicago	21
Pittsburgh	22
Philadelphia	24
Cleveland	24
Birmingham	25
The Belgian Iron Market	25
New York	26
The New York Machinery Market	26
The Philadelphia Machinery Market	28
Carnegie Will Not Build Steel Cars	29
The Metal Market	30
Stocks	30
Hardware:	
Condition of Trade	31
Notes on Prices	32
Third Annual Convention North Dakota Retail Hardware Association	35
What Is a Carload?	40
A Hardwareman in the Hawaiian Islands	40
Minnesota Retail Hardware Association	41
A Call for a Hardware Association in Missouri	43
Retail Hardware Association Matters in California	43
Sportsmen's Exposition	44
Requests for Catalogues, Quotations, &c	44
Notes on Prices	44
Export Notes	45
Price Lists, Circulars, &c	45
Trade Items	45
Cash Business	46
Among the Hardware Trade	46
Miscellaneous Notes:	
Klondike Sample Holder	47
Eagle Horse Shoe Company	47
New Sheave	47
Heavy Milk Cans	47
Automatic Chemical Ejector. Illustrated	47
Hand Lever Cycle Pump. Illustrated	48
Bridgeport Bicycle Pumps. Illustrated	48
The Tyler Weaners. Illustrated	48
Improved Cycle Chain Adjustment. Illustrated	48
Everlasting Chimney Cap. Illustrated	48
Millers Falls Nail Puller No. 3. Illustrated	49
The Wilcox-Lillie Adjustable Corn Husker. Illustrated	49
The Lane Elevator Door Hanger. Illustrated	49
Fiber Seaming Cord. Illustrated	50
Wolff-American Chainless Bicycle with Sager Gear. Illus	50
Current Hardware Prices	51
Current Metal Prices	58

Current Hardware Prices.

FEBRUARY 22, 1899.

NOTE.—The quotations given below represent Current Hardware Prices, whether made by manufacturers or jobbers. They apply to such quantities of goods as are usually purchased by retail Hardware merchants. Very small orders and broken packages often command higher prices, while lower prices are often given to larger buyers.

The character @ is used to indicate a range of price: thus discount 50 & 10 @ 50 & 10 & 5%, signifies that the goods in question are sold at prices ranges from 50 & 10% to 50 & 10 & 5%.

Many of the lists referred to in the following quotations are given in *The Iron Age* Standard Hardware Lists (price 50 cents). On many other articles, however, the different manufacturers have their own lists, which they will send to the trade on application. In the advertising columns will be found the announcements of manufacturers of nearly all kinds of Hardware, who will be pleased to furnish the trade information in regard to their goods and prices.

Adjusters Blind—

Domestic, ₩ doz. $3.00....33⅓@33⅓&10%
North's.....10%
Zimmerman's—See *Fasteners, Blind.*

Window Stop—

Ives' Patent.....40%
Taplin's Perfection.....45%

Ammunition—See *Caps, Cartridges, Shells, &c.*

Anti-Rattlers—

Burton's No. 1.....₩ doz. pr., $1.00
Burton's No. 2.....₩ doz. pr., $0.75
Fernald's, Wire.....₩ doz. pr., $0.75

Anvils—American—

Eagle Anvils, ₩ lb.....7¼@7¾¢
Hay-Budden, Wrought.....8¼@8¾¢
Horseshoe brand, Wrought.....9½@9¾¢
Samson, ₩ lb.....7¼@8¢
Trenton, Wrought.....₩ lb 8¼@8¾¢

Imported—

Armitage's Mouse Hole.....8¾@9¼¢
Solid Swedish Steel.....10@10½¢
Peter Wright's.....9¾@10¼¢

Anvil, Vise and Drill—

Millers Falls Co., $18.00.....20%

Apple Parers—See *Parers, Apple, &c.*

Augers and Bits—

Common Double Spur.....80@80&5%
Boring Machine Augers.....80@80&5%
Car Bits, 12-in. twist.60&10&10@70&10%
Jennings' Pattern Car Bits...60@60&10%
Jennings' Pattern Auger Bits.....70&10@75&5%
Adams Art Auger Bit.....30%
Cincinnati Bell Hangers' Bits.....40%
Forstner Pat. Auger Bits.....25%
C. E. Jennings & Co.:
No. 10 ext. lip. R. Jennings' list.....40@40&10%
No. 30. R. Jennings' List..50&10@60%
Russell Jennings'.....25&10&2½%
L'Hommedieu Car Bits15&10@15&10&5%
Pugh's Black.....20%
Pugh's Jennings' Pattern.....35%
Snell's.....70@70&5%
Wright's Jennings Bits (R. Jennings' list).....50%

Bit Stock Drills—

Standard List.....60&10&5@60&10&10%
Cincinnati, for metal.....50&5@50&10%
Syracuse, for wood.....40%
W. & B. Wood Boring Brace Drills...40%

Expansive Bits—

Clark's small, $18; large, $26.....50@50&10%
Lavigne's Clark's Pattern, No. 1, ₩ doz., $26; No. 2, $18....50@50&10%
Steer's No. 1, $26; No. 2, $18...40@40&5%
Swan's.....40@40&10%

Gimlet Bits—

Common Double Cut...₩ gr. $2.75@3.25
German Pattern.....₩ gr. $5.00
Double Cut, makers' lists....50@50&10%
See also *Gimlets.*

Hollow Augers—

Bonney's Adjustable, ₩ doz.....$16.00
Cincinnati Adjustable.....25&10%
Cincinnati Standard.....35&10%
Douglass'.....33⅓@33⅓&10%
Stearns', Common, No. 6.....10%
Stearns', all other numbers.....20&10%

Ship Augers and Bits—

L'Hommedieu's.....15&10@15&10&10%
Snell's.....30&10@40%
Snell's Ship Auger Patt'n Car Bits, 40@40&10%
Watrous'.....40@40&10%

Awl Hafts, See *Hafts, Awl.*

Awls—

Brad Awls:
Handled.....₩ gr. $3.00@3.35
Unhandled, Shouldered..₩ gr. 65@70¢
Unhandled, Patent.....₩ gr. 70@75¢
Peg Awls:
Unhandled, Patent.....₩ gr, 33@35¢
Unhandled, Shouldered..₩ gr. 65@70¢
Scratch Awls:
Handled, Common....₩ gr. $3.25@3.75
Handled, Socket....₩ gr. $11.00@12.00

Awl and Tool Sets—See *Sets, Awl and Tool.*

Axes—

First quality, best brands....$5.00@5.25
First quality, other brands...$4.25@4.75
Jobbers' Special Brands, good quality.....$4.00@4.75
Cheap Handled Axes.....$4.75@5.25
Beveled, add 25¢ ₩ doz.

Axle Grease—See *Grease, Axle*

Axles—

	Iron.	Steel.
Concord, loose collar....	4½¢	4¾¢
Concord, solid collar....	5½¢	5 ¢
No 1 Common.....	3½¢	3¼¢
No. 1¼ Com.. New Style.	4 ¢	3¾¢
No. 2, Solid Collar.....	4½¢	4 ¢

Nos. 7, 8 11 to 14.....60&10&5%
Nos. 15 to 18.....50%
Nos. 19 to 22.....70%

8% cash

Balances—

Sash—

Caldwell low list.....80%
Vanderbilt.....30%

Spring—

Spring Balances.....50&10@60%

No.	2000	20	30
Chatillon, ₩ doz...	$0.60	.70	1.50

Chatillon Straight Balances.....50%
Chatillon Circular Balances.....60%

Barb Wire—See *Wire, Barb*

Bars— Crow—

Steel Crowbars, 10 to 40 lb. ₩ lb 2½@2¾¢

Beams, Scale—

Scale Beams, List Jan. 12, '82....50&10%
Chattillon's No. 1.....40%
Chattillon's No. 2.....50&10@50&10&5%

Beaters— Egg—

New Dover (Dover Stamping Co.).
₩ doz. 75¢ ₩ gr. $7.50
Dover, Ex. Family size.....₩ doz. $2.00
New Dover.....₩ doz. 75¢; ₩ gro. $7.50
Dover (Standard Co.), No. 10, ₩ gro. $5.50; No. 5, $6.00; No. 15, $12.00
Dover (Taplin Pat. Imp.), No. 100, ₩ gro. $7.00; No. 150, ₩ doz. $2.00.
Lebanon.....₩ doz. $2.75@$3.00
Spiral.....₩ gr. $4.25@$4.50
Wonder (S. S. & Co.).....₩ doz. 75¢

Bellows—

Blacksmith—

Standard List.....70&10@70&10&5%
Often sold at net prices:

Inch.....	30	32	34	36	38	40
Each....	$3.75	4.00	4.75	5.25	6.00	7.00

Extra Length:
Each....$4.50 5.00 5.50 6.25 7.00 8.50

Molders—

Inch....	9	10	11	12	14	16
Per doz.	$6.00	6.50	7.75	8.75	11.00	13.25

Hand—

Inch.....	6	7	8	9	10	12
Per doz...	$3.25	3.50	3.75	4.50	5.25	6.00

Bells— Cow—

Wrought, Sheep and Cow....60&10@70%
Kentucky.....75&10%
Western.....70%
Jersey.....75&10%
Texas Star.....50&10%

Door—

Gong, Yankee.....60&10%
Lever, R. & E. Mfg. Co.'s.....60&10%
Lever and Pull, Sargent's.....45&10@45&10&5%

Hand—

Hand Bells, Polished..70&10@70&10&5%
White Metal.....70@70&10%
Nickel Plated.....66⅔@66⅔&5%
Swiss.....70%
Silver Chime.....40&10@50%

Miscellaneous—

Farm Bells.....₩ lb 2¢
Steel Alloy Church and School...50&10%

Belting

Rubber—

Common Standard.....75&10@75&10&5%
Extra.....70@70&10%
Standard.....70&10@75%

Leather—

Best Oak Tanned.....60&10@60&10&10%

Bench Stops—See *Stops, Bench*

Benders and Upsetters, Tire—

Brettell Tire Upsetter, $15.....50%
Green River Tire Benders and Upsetters.....20%
Stoddard's Lightning Tire Upsetters.....40@50%

Bicycle Goods—

Lane's Cycle Hanger.....33⅓&5%

Bits—

Auger, Gimlet, Bit Stock Drills, &c.—
See *Augers and Bits.*

Bit Holders—See *Holders.*

Blind Adjusters—See *Adjusters, Blind.*

Blind Fasteners—See *Fasteners, Blind.*

Blind Staples—See *Staples, Blind.*

Blocks—

Common Jap'd Sheaves.....75@75&5%
Eddy's All Steel, Common Bushed....70%
Eddy's All Steel, Bronze Bushed...60&5%
Hartz All Steel, Common Bushed.50&10%
Hartz All Steel, Bronze Bushed..50&10%
Ford's Star Brand, Self Lubricating..70%
Hollow Steel, Ford's Pat. Star Brand....50&10%
Lane's Pat. Adj., Perfect Safety and Junior.....30%
Stowell's Novelty, Mal. Iron.....50&10%
See also *Machines, Hoisting.*

Boards Stove—

Market somewhat irregular.
Manufacturers quote.....30&10@40%
Jobbers often sell.....40&10@50%

Bolts—

Carriage, Machine, &c.—

Common, list Jan. 30, '95.....75&7½@75&20%
Norway Iron, $3.00, list Oct. 7, '84.....75&10@75&10&5%
Phila. Eagle, $3.00 list.....85&15%
Bolt Ends, list Jan. 30, '95.....80@80&10%
Machine list June 12, '96....80@80&10%

Door and Shutter—

Cast Iron Barrel, Round Brass Knob:

Inch	3	4	5	6	8
Per doz.	$0.27	.30	.38	.48	.66

Cast Iron Bottom, Japanned:

Inch	6	8	10
Per doz.	$0.83	1.05	1.65

Cast Iron Chain, Flat, Japanned:

Inch	6	8	10
Per doz.	$1.10	1.32	1.87

Cast Iron Shutter, Brass Knobs:

Inch	6	8	10
Per doz.	$0.49	.77	.88

Wrought Barrel Brass Knob:

Inch	3	4	5	6	8
Per doz.	$0.44	.50	.61	.70	1.28

Ives' Patent Door, 60&10&5@60&10&10%
Wrought Flush—
B. K., Sargent's list.....50&10@60%
B. K., Stanley's list..60&10@60&10&5%
Sunk, Sargent's or Stanley's list.....50&10@50&10&5%
Wrought Shutter, Standard list 60&10&7½@70%
Wrought Square, Standard list 75@75&10%

Stove and Plow—

Plow.....70@70&10%
Stove, list August 27, 1898.....80%

Tire—

Common, list Feb. 28 '83.....80%
American Screw Company:
Norway Phila., list Oct. 16, '84.....80%
Eagle Phila., list Oct. 16, '84.....85%
Bay State, list Feb. 28, '83.....80%
Franklin Moore Co.:
Norway Phila., list Oct. 16, '84.....80%
Eagle Phila., list Oct. 16, '84.....85%
Eclipse, list Feb. 28, '83.....80%
Port Chester Bolt & Nut Company
Empire, list Feb. 28, '83.....80%
Keystone Phila., list Oct. '84.....85%
Norway Phila., list Oct. '84.....80%

Borers, Tap—

Borer's Tap, Ring, with Handle:

Inch	1¼	1¼	1½	2
Per doz.	$3.75	4.75	5.25	6.75

Inch	2¼	2½
Per doz.	$8.00	11 00

Enterprise Mfg. Co.....25@30%
No. 1, $1.25; No. 2, $1.65; No. 3, $2.50 each.

Boring Machines—*See Machines, Boring.*

Bow Pins—See *Pins, Bow.*

Boxes, Letter—

Tatum's.....50%

Braces—

NOTE.—Most Braces are sold at net prices.
Barber's.....60@60&10%
Common Ball, American.....$1.10@1.20
Fray's Genuine Spofford's.....50&10&5%
Fray's No. 70 to 120, 81 to 123, 207 to 414.....50&10&5%
P., S. & W. Co., Peck's Patent.....60&10&5@60&10&10%

Brackets—

Shelf, plain; Regular, list....75@75&10%
Stowell's Shelf.....70&5%
Bradley Shelf Brackets.....60&10%

Bright Wire Goods—See *Wire.*

Broilers—

Wire Goods Co.....75@75&10%

Buckets, Well and Fire—See *Pails*

Bucks, Saw—

Hoosier.....₩ gr. $29.00 @ $34.00

Bull Rings—See *Rings, Bull.*

Butts— Brass—

Cast Brass, Tiebout's.....50%
Wrought Brass, list Sept., 96.40@40&10%

Cast Iron—

Fast Joint, Broad.....60@60&10%
Fast Joint, Narrow....60&10@60&10&10%
Loose Joint.....
Loose Pin.....
Mayer's Hinges.....
Parliament Butts.....
} 75&5@75& 10&5%

Wrought Steel—

Loose Joint.....
Table and Back Flaps.....
Narrow and Broad.....
Inside Blind.....
Loose Pin.....
} List Apr. 1, 1895 75&10 @75&10&10%
Loose Pin, Ball and Steeple Tip.....80&5@80&10&5%
Bronzed Wrought Narrow and Inside Blind Butts.....50&10@50&10&5%

Cages, Bird—

Hendryx, Brass:
3000, 5000, 1100 series.....10%
1200 series.....40%
200, 300, 600 and 900 series.40&10@50%
Hendryx Bronze:
700, 800 series.....40&10@50%
Hendryx Enameled.....40&10@50%

Calipers—See *Compasses.*

Calks, Toe—

Burke's, One Prong, Blunt.....4@4¼¢
Burke's, One Prong, Sharp.....5@5½¢
Burke's, Two Prong, Blunt.....5@5½¢
Burke's, Two Prong, Sharp.....6@6½¢
Gautier, One Prong, Blunt.....5½@6¢

Can Openers—See *Openers, Can*

Cans, Milk—

Buffalo Pattern:

	5	8	10 gal.
Concave Cover.....	$1.25	$2.00	$2.20
Convex Cover.....	1.40	2.15	2.35
Illinois Pattern.....	....	1.80	2.00
Iowa Pattern.....	....	1.75	1.95
New York Pattern.....	....	2.25	2.45
Baltimore Pattern.....	....	2.35	2.55

Chicago S. Co. Seamless Neck.

	5	8	10 ga
Iowa.....	$1.30	$1.50	$1.65 each
Sturges.....	1.30	1.50	1.65 each
Elgin.....	....	1.75	1.90 each
Chicago...	1.50	1.90	2.00 each

Cans, Oil—

Galvanized Blue Band, 1-gal., ₩ doz. $1.60@$1.80
S. S. & Co., Galvanized Family with faucet, 3-gal., ₩ gro. $54; 5-gal., $60, 10-gal., $180.00
Glass Oil.....₩ doz. $1.60@$1.85

Caps—Percussion—

Eley's E. B.....50¢
G. D.....₩ M. 32@34¢
F. L.....₩ M. 37@40¢
G. E.....₩ M. 47@50¢
Musket.....₩ M. 57@60¢

Primers—

Berdan Primers, $1.60.....2%
B. L. Caps (Sturtevant Shells) $1.00...2%
All other primers.....$1.00@$1.10

Carpet Stretchers—See *Stretchers, Carpets.*

Cartridges—

Note.—These prices are sometimes shaded by jobbers.
B. B. Caps, Con. Ball Swgd.....$1.90
B. B. Caps, Round Ball.....$1.12@1.18
Blank Cartridges, except 22 and 32 cal., additional 10% to above discounts.
Blank Cartridges, 22 cal. $1.75.....2%
Blank Cartridges, 32 cal., $3.50.....2%
Cent. Fire, Military and Sporting 15&5&2%
Cent. Fire, Pistol and Rifle.....25&5&2%
Primed Shells and Bullets.....15&5&2%
Rim Fire Cartridges.....50&2%
Rim Fire, Military.....15&5&2%

Carpet Sweepers—See *Sweepers, Carpet.*

Casters—

Bed Plate, etc.....50@70&5%
Martin's Patent (Phœnix).....60@60&5%
Payson's Anti-friction Furniture.....70&10&5%
Payson's Anti-Friction Truck.60&10&5%
Standard Ball Bearing.....50%
Tatum's Anti-friction.....60@60&10%
Tucker's Patent, low list.....50@50&5%

Cattle Leaders—See *Leaders, Cattle.*

Chain—

American Coil, Cask Lots:

3-16	¼	5-16	⅜	7-16	½	9-16
$5.50	4.10	3.10	2.75	2.70	2.50	2.40

⅝	¾	⅞	1 Inch.
$2.35	2.25	2.20	2.15

For less than Cask lots add 1-10c.
German Coil, list July 24, '97 60&10&10&5@70&5%
German Halter Chain, list July 24, '97 60&10&10&5@70%
Trace, Wagon and Fancy Chains, list revised April, '98.....70&5@70&10%
Breast, Hitching and Rein Chains.
Covert Sad. Works.....70%
Covert Mfg. Co.:
Breast.....45&2%
Halter.....45&2%
Heel.....45&2%
Rein.....45&2%
Stallion.....45&2%
Jack Chain, Iron, list July 10, '93.70&10%
Jack Chain, Brass, list July 10, '93.....60@60&10%
Garland's Eureka Weldless Coil.....75%
Garland's Eureka Weldl's Halters 70&10%
Garland's Eureka Weldless Cow Ties 60%
Oneida Halter Chain.....60@60&10%
Gal. Pump Chain.....lb 3¼@4¢

Chalk—(From Jobbers.)

Carpenters', Blue.....₩ gr. 50@52¢
Carpenters', Red.....₩ gr. 45@47¢
Carpenters', White.....₩ gr. 40@42¢
See also *Crayons.*

Chalk Lines—See *Lines.*

Checks, Door—

Bardsley's.....40%
Eclipse.....60@60&10%
Norton.....40@50%
Larimer.....50@60%

Chisels—

Socket Framing and Firmer

Standard list.....75&10@80%
Buck Bros.....30%
Charles Buck.....30%
Douglass.....75&10@80%
L. & I. J. White.....30@30&5%

Tanged and Miscellaneous.

Buck Bros. 30%
Charles Buck 30%
Tanged Firmers ..... 40&10@50%
L. & I. J. White, Tanged ..... 25&5%
Cold Chisels, good quality ..... ℔ b 14@16¢
Cold Chisels, fair quality ..... ℔ b 12¢
Cold Chisels, ordinary ..... ℔ b 7@7½¢

Chucks—

Beach Pat., each $8.00 ..... 20%
Graham Patent 33⅓%
Morse's Adjustable, each $7.00 ..... 25%
Syracuse, Balz Pat. 30%
Skinner Patent Chucks:
Combination Lathe Chucks 40%
Drill Chucks 30%
Independent Lathe Chucks 40%
Improved Planer Chucks 20%
Universal Lathe Chucks 40%
Union Mfg. Co.:
Combination 40%
Czar Drill 30%
Geared Scroll 33⅓%
Independent 40%
Union Drill 30%
Universal 40%
Face Plate Jaws 35%

Clamps—

Adjustable Cincinnati ..... 25&10%
Adjustable, Hammers' ..... 20@20&5%
Adjustable, Stearns' ..... 30@30&10%
Cabinet, Sargent's ..... 45&10@50&10%
Carriage Makers', P., S. & W. Co. .40&10%
Carriage Makers', Sargent's ..... 50&10@50&10&5%
Cincinnati Carpenters', &c. ..... 25&10%
Joiners' Clamps, Tatum's ..... 25&10%
R. I. Tool Co.'s Wrought Iron 25%
Saw Clamps, see *Vises, Saw Filers'.*
Stearns Malleable, with Wrought Iron Screw ..... 75@75&5%
Stearns Steel ..... 25&10%
Tatum's Joiners' Adjustable ..... 25&10%
Tatum's Quilt, Cabinet, &c. 40%
Warner's ..... 40&10@40&10&5%

Cleaners, Walk—

Star Socket, All Steel ..... ℔ doz. $4.00 net
Star Shank, All Steel ..... ℔ doz. $3.75 net

Cleavers, Butchers'—

Foster Bros., Flat Hds., 30%; Rd. Hds., 40%
New Haven Edge Tool Co.'s 40%
Nichols Bros., Flat hdl., 30%; Rd. hdl., 40%
Fayette R. Plumb ..... 33⅓&7½%
P., S. & W. ..... 33⅓&5@33⅓&10%
L. & I. J. White 25%

Clippers—

Chicago Flexible Shaft Company:
Handy Toilet ..... ℔ doz. $7.20
Mascotte Toilet ..... ℔ doz. $8.40
Monitor Toilet ..... ℔ doz. $9.00
Stewart's Patent ..... ℔ doz. $10.00
Hotchkiss Horse Clippers, ℔ doz.:
No. 10, $18; No. 30, $15.60; No. 22, $13.80; No. 20, $13.20; No. 8, $10.80.
Hotchkiss Toilet Clippers, ℔ doz.:
No. 1, $9.60; No. 101, $10.80; No. 201, $10.80; No. 300, $13.20; No. 500, $15.

Clips, Axle—

Eagle and Superior ¼ and 5-16 inch ..... 75@75&10%
Norway, ¼ and 5-16 inch ..... 70@70&10%

Cloth and Netting, Wire
—*See Wire, &c.*

Cocks, Brass—

Hardware list (Globe, Kerosene, Lever Bibbs, Racking, &c.) ..... 70@70&10%

Coffee Mills—See *Mills, Coffee.*

Collars, Dog—

Brass, Pope & Stevens' list 40%
Chapman Mfg. Company, new list 40%
Embossed, Gilt, Pope & Stevens' list 30&10%
Leather, Pope & Stevens' list 40%

Combs, Curry—

Fitch's ..... 25&10%
Hotchkiss', List Nov. 20, '96 ..... 25&10%
New York Stamping Co., List Sept. 17 '97 ..... 25&10%
New Centaur Spring Curry Comb:
With Wire Handle ..... ℔ doz. $1.20
With Strap Handle ..... ℔ doz. $1.60

Compasses, Dividers, &c.

Ordinary Goods ..... 70&10@75%
Bemis & Call Co.'s:
Dividers 65%
Calipers, Call's Patent Inside 55%
Calipers, Double 70%
Calipers, Inside or Outside 70%
Calrs, Wing 60%
Compasses ..... 50&5%
J. Stevens A. & T. Co. ..... 25&10%

Coolers, Water—

B. S. & Co.: 2-gal., $2.70; 3-gal., $3.20; 4-gal., $3.60; 6-gal., $4.75; 8-gal., $7.20; 11-gal., $11; 14-gal., $14 each 60%

Coopers' Tools—

See *Tools, Coopers'.*

Cord— Sash—

Braided, Drab and Fancy, ℔ b 55¢ ... 30%
Braided, White, ℔ b ..... 14@20%
Cable Laid Italian .... ℔ b A, 18¢; b, 16¢
Common India ..... ℔ b 8½@9¢
Cotton Sash Cord ..... 14½¢
Patent Russia ..... ℔ b 12½@13¢
Cable Laid Russia ..... ℔ b 13½@14¢
India Hemp, Braided ..... ℔ b 13¢
India Hemp ..... ℔ b 9@10¢
Patent India ..... ℔ b 10½¢
Pearl Braided ..... ℔ b 14¢
Massachusetts, White ..... 17¢
Eddystone Braided Cotton ..... ℔ b 18¢
Harmony Cable Laid Italian ..... ℔ b 18¢
Ostrawan Mills:
Crown, Solid Braided White ... ℔ b 18¢
Braided, Giant, White ..... ℔ b 16¢
Peerless:
Cable Laid Italian ..... 16¢
Cable Laid Russian ..... 13¢
Cable Laid India ..... 18¢
Braided India ..... 18¢
Samson:
Braided, Drab Cotton ..... ℔ b 33@35¢
Braided, Italian Hemp ..... ℔ b 31@33¢
Braided, Linen ..... ℔ b 53@56¢
Braided, White Cotton ..... ℔ b 27@30¢
Silver Lake:
A quality, Drab, 40¢ ..... 15&7½%
A quality, White, 35¢ ..... 15&7½%
B quality, Drab, 35¢ ..... 15&7½%
B quality, White, 30¢ ..... 15&7½%
Italian Hemp, 40¢ ..... 15&7½%
Linen, 57½¢ ..... 15&7½%

Wire, Picture—

Braided or Twisted ..... 85@85&5%

Corn Knives and Cutters
—See *Knives, Corn.*

Crackers, Nut—

Acme, Japanned, ℔ gr. $30 ..... 40%
Acme, Nickel Plated, ℔ gr. $30 ..... 20%
Turner & Seymour Mfg. Co. 50%

Cradles—

Grain 55%

Crayons—

White Round Crayons, ℔ gross ..... 5@6¢
Cases, 100 gr., $4.50@$5.00, at factory.
D. M. Steward Mfg. Co.:
Metal Workers', ℔ gr. $2.50 .... 20@25%
Railroad, ℔ gr. $2.00 ..... 20@25%
Rolling Mill, ℔ gr. $2.50 ..... 20@25%
Soapstone Pencils, ℔ gr. $1.50 .. 20@25%
See also *Chalk.*

Creamery Pails—See *Pails, Creamery.*

Crooks, Shepherds'—

Fort Madison, Heavy ..... ℔ doz. $7.00
Fort Madison, Light ..... ℔ doz. $6.50

Crow Bars—See *Bars, Crow.*

Cultivators—

Victor Garden ..... ℔ doz. $10.00

Curry Combs—

See *Combs, Curry.*

Cutters— Meat—

American 30%

Nos.	1	2	3	4	5
Each	$5	$7	$10	$25	$50 $60

Connecticut, No. 0, $2.00; No. 1, $2.50; No. 8, $3.00; No. 12, $3.50 33⅓%

Enterprise ..... 25@25&7½%				
Nos.	5	10	12	22	32
Each	$2	$3	$2.50	$4	$6

Dixon's, ℔ doz. 33⅓%

Nos.	1	2	3	4
	$14.00	$17.00	$19.00	$30.00

Hale's, ℔ doz. ..... 70@70&5%

Nos.	11	12	13
	$27.00	$33.00	$45.00

Home No. 1, ℔ doz. $26.00 ..... 60%
Little Giant, ℔ doz. ..... 50&10%

Nos.	305	310	312	320	322
	$35.00	$48.00	$44.00	$72.00	$68.00

Miles' Challenge, ℔ doz. ..... 45@45&10%

Nos.	1	2	3
	$22.00	$30.00	$40.00

New Triumph No. 605, ℔ doz. $24.00 .. 33⅓&5%
Woodruff's, ℔ doz 33⅓%

Nos.	100	150
	$15.00	$18.00

Chadborn's Smoked Beef Cutter, ℔ doz. $60.00
Enterprise Beef Shavers ..... 25@30%

Slaw and Kraut—

Tucker & Dorsey Mfg. Co.:
Kraut Cutters ..... 50@50&10%
Slaw Cutters, 1 Knife, ℔ gr. ... $15@$18
Slaw Cutters, 2 Knife, ℔ gr. ... $20@$27

Tobacco—

All Iron, Cheap ..... ℔ doz. $4.50@5.00
Enterprise ..... 25@30%
National, ℔ doz. $21.00 ..... 30&5%
Sargent's, ℔ doz. $24.00 ..... 60@60&10%

Washer—

Appleton's, ℔ doz. $16.00 ..... 60&10@60&10&10%
Bonney's ..... ℔ doz. $4.25
Cincinnati ..... 25&10%
Tatum's ..... 25&10%

Diggers, Post Hole, &c.—

Gem, Improved ..... ℔ doz. $8.50@$9.00
Iwan's Improved Post Hole Auger. 40&5%
Iwan's Perfection Post Hole Digger .... ℔ doz. $10.00
Samson, ℔ doz. $36.00, 25&10@25&10&5%
Vaughan's Post Hole Auger. ℔ doz. .... 5.25@5.75

Dividers—See *Compasses.*

Dog Collars—See *Collars, Dog.*

Door Checks—

See *Checks, Door.*

Door Springs—

See *Springs, Door.*

Drawers, Money—

Tucker's Pat. Alarm Till No. 1, ℔ doz. $18; No. 2, $12; No. 3, $11; No. 4, $12.

Drawing Knives—

See *Knives, Drawing.*

Drills and Drill Stocks—

Common Blacksmith's Drill ... each $1.50
Bench Drills, Stearns' ..... 50@50&10%
Blacksmiths' Self-feeding, each $7.50, 20%
Breast, Millers Falls, each $3.00 ..... 25%
Breast, P., S. & W. ..... 40&10%
Goodell Automatic Drills .. 40&5@40&10%
Ratchet, Bignall & Keeler ..... 30&5%
Ratchet, Curtis & Curtis 25%
Ratchet, Ingersoll's 25%
Ratchet, Parker's 40%
Ratchet, Weston's ..... 20@25%
Ratchet, Whitney's ..... 20&10%
Whitney's Hand Drill, No. 1, $10.00; Adjustable, No. 10, $12.00 ..... 33⅓%

Twist Drills—

Standard List ..... 60&10&5@60&10&10%

Drill Bits or Bit Stock

Drills—See *Augers and Bits.*

Drill Chucks—See *Chucks.*

Dripping Pans—

See *Pans, Dripping.*

Drivers, Screw—

Balsey's Screw Holder and Driver, ℔ doz. 2½-inch, $6; 4-in., $7.50 6-in., $9 .. 40%
Brace Screw Drivers ..... 25&10&5%
Buck Bros. 30%
Buck Bros' Screw Driver Bits 27½%
Champion ..... 40&10%
Disston's ..... 50@50&10%
Douglass Mfg. Co. ..... 20@20&10%
Electric Spiral ..... 50&10&10&5%
Ellrich's Socket ..... 40&10%
Fray's Hol. H'dle Sets, No. 3, $12.00 50%
Gay & Parsons' Ratchet 35%
Goodell's Automatic ..... 50&10&10@50&10&10&5%
Hercules, W. & B. ..... 70@75%
Howard-Allard Spiral ..... 50&10&10&5%
Jones Reversible 50%
Knapp & Cowles:
Nos. 1 and 2 ..... 70&10%
No. 3 ..... 60&10%
Nos. 4 and 00, Acme and Ideal .. 60&10%
Mayhew's Black Handle 50%
Mayhew's Monarch ..... 45&10%
New England Specialty Co. ..... 50&10%
New York, Manhattan and Handy ... 20%
Sargent & Co.'s:
Nos. 1, 20, 40 and 60. 50&10@50&10&5%
Nos. 50 and 55 ..... 50&10&10@60&5%
Screw Driver Bits ..... ℔ doz. 50&75¢
Stanley's R. & L. Co.'s:
No. 64, Varnished Handles ..... 70&10%
No. 86 ..... 75&10%
Syracuse Screw Driver Bits 40%

Egg Beaters—See *Beaters, Egg.*

Emery—No. 4 to No. 54 to Flour, CF

	46 gr.	1.80 gr.	F.FF.
Kegs, ℔ b ...	4½¢	5 ¢	3 ¢
½ kegs, ℔ b.	4½¢	5¼¢	3¼¢
¼ kegs, ℔ b.	5 ¢	5½¢	3½¢
10-℔ cans, 10 in case	6 ¢	6½¢	5½¢
10℔ cans, less than 10	10 ¢	10¢	8 ¢

Enameled and Tinned Ware—See *Ware, Hollow.*

Escutcheon Pins—

See *Pins, Escutcheon.*

Extractors, Lemon Juice
—See *Squeezers, Lemon.*

Fasteners, Blind—

Zimmerman's ..... 50&10%

Faucets—

B. & L. B. Co.:
West's Lock, Open and Shut Key 50&10%
Burnside's Red Cedar 50%
Burnside's Red Cedar, bbl. lots .. 50&10%
Cork Lined ..... 70&5@70&10%
Metallic Key, Leather Lined .. 65&10@65&10&10%
John Sommer's Peerless Tin Key 40%
John Sommer's Boss Tin Key 50%
John Sommer's No Brand Metal Key. 60%
John Sommer's W. P. Metal Key 40%
John Sommer's Diamond Lock 40%
John Sommer's I. X. L. Cork Lined .. 50%
John Sommer's Reliable Cork Lined. 60%
John Sommer's Common Cork Lined. 70%
John Sommer's Chicago Cork Lined .. 60%
John Sommer's O. K. Cork Lined 50%
John Sommer's Perfection Cedar 40%
John Sommer's Cedar (in bbls.) .. 50&10%
Star ..... 60@60&5%
Star, Metal Plug, new list ..... 40@40&5%
Stearns' Wood, No. 200, Wood-lined Key ..... 50&10%
Stearns' Matchless, Wood, No. 300 .. 60%
Stearns' Gem, Wood, No. 400 .... 60&10%
Lockport, Metal Plug, reduced list. 60&5%
Self Measuring:
Enterprise, ℔ doz. $36.00 ..... 40%
Lane's, ℔ doz. $36.00 ..... 33⅓%
National Measuring, ℔ doz. $36.00. 33⅓%

Felloe Plates—

See *Plates, Felloe.*

Fifth Wheels—

Brewster ..... 75&10@80%
Derby and Cincinnati ..... 70&10@75%

Files—Domestic—

Best Brands ..... 70@70&10&10%
Good Brands ..... 75&10@80&5%
Fair Brands ..... 80&5@80&10%
Second Quality ..... 80&10@85%

Imported—

Stubs' Tapers. Stubs' list, July 24, '97. 30@33⅓%

Fixtures, Grindstone—

Inch	15	17	19	21	24
Per doz.	$4.50	2.50	2.75	3.25	4.50

Stowell's ..... 55&10%
P., S. & W. Co. ..... 50&10%
Reading Hardware Co. ..... 30&20&10%
Sargent's Patent ..... 70&10@70&10&10%

Fluting Machines—

See *Machines, Fluting.*

Fodder Squeezers—

See *Squeezers, Fodder.*

Forks—

Hay, 2 tine ..... 70&7½&2%
Hay, 3 tine ..... 70&10&2%
Manure, 4 tine ..... 70&15&10&2%
Manure, 5 and 6 tine ..... 70&20%
Spading ..... 75&5&2½&2%
Victor, Hay ..... 75&5&2%
Victor, Manure ..... 77½&15%
Victor, Header ..... 75&5%
Champion, Hay ..... 75&2½&2%
Champion, Manure ..... 66⅔&33⅓&2%
Columbia, Hay ..... 70&15%
Columbia, Manure ..... 75&12½&2%
Columbia, Spading ..... 66⅔&33⅓&2%
Hawkeye Wood Barley 4 tine ℔ doz $5.00; 6 tine, $5.50.
Plated see *Spoons.*

Frames—

Saw—

Red, Polished and Varnished ... ℔ doz. $1.00@$1.10
White ..... ℔ gro. $8.25@$8.50

Screens, Window and Door—

Bonanza Window Screens ..... 60@60&5%
Flyer Window Screens ..... 50&10&5%
Maine Window Screen Frames 50%
Perfection Window Screens ... 60&60&5%
Phillips' Window Screen Frames .. 60&5%
Porter's Extension Window Screens .. 60&5%
Stearns' Frames and Corners 25@25&10%
Stearns' Monarch Adjustable Window Screens 50%
Stearns' Gem Window Screen Frames. 25&10%
Wabash Adj. Window Screen 50%
Warner's Screen Corner Irons .. 33⅓&10%

Freezers Ice Cream—

Qts.	2	3	4	6	8	10
Best	$1.30	1.50	1.75	2.20	2.90	3.80
Good	1.20	1.30	1.60	2.00	2.60	3.50
Fair	$1 00	1.10	1.30	1.75	2.30	2.90

Fruit and Jelly Presses—

See *Presses, Fruit and Jelly.*

Fry Pans—See *Pans, Fry.*

Funnels—

Gersdorff's Perfection, Standard and Globe; 1 to 3 gro., 10&5%; 3 to 5 gro., 20&5%.

Fuse—

	Per 1000 feet.
Hemp Fuse	$2.60
Cotton Fuse	2.90
Single Taped Fuse	3.50
Double Taped Fuse	4.70
Triple Taped Fuse	5.70

10%

Gates, Molasses—

Stearns' Molasses and Oil ..... 30&10%
Stebbin's ..... 80&20@85%

Gauges—

Barrett's Comb. Roller Gauge ..... ℔ doz. $6.75@7.25
Marking, Mortise, &c. 60&10@60&10&10%
Stanley R. & L. Co.'s Butt & Rabbet Gauge ..... 25&10%
Wire, Brown & Sharpe's 25%
Wire, Morse's 25%
Wire, P., S. & W. Co. ..... 10&10%
Wire, Wheeler, Madden & Co. 10%

Gimlets—

Nail, Metal, Assorted ..... ℔ gr. $2.30
Screw, Metal, Assorted ..... ℔ gr. $4 60
Nail, Wood Handled, Assr't'd ℔ gr. $4 30
Spike, Wood Handled, Assr't'd. ℔ gr. $4.90

Glue—

Le Page's Liquid, List A, 37½%; List B, 33⅓%; List C, 25%

Glue Pots—See *Pots, Glue.*

Grease, Axle—

Allerton's Axle:
1 ℔ Tins. ℔ gr. $9.00
3 ℔ Tin Pails, ℔ doz., $2.90; 5 ℔, $3.00; 10 ℔, $6.00.
25 ℔ wood pails ..... ℔ doz. $12.00
Dixon's Everlasting .... 10-℔ pails, ea. 85¢
Dixon's Everlasting, in bxs. ℔ doz. 1 ℔ $1.20; 2 ℔ $2.00
Lower grades, special brands, ℔ gr. $5.00@6.50

Grindstone Fixtures—
See *Fixtures, Grindstone.*

Gun Powder—See *Powder.*

Hack Saws—See *Saws.*

Hafts, Awl—

Peg Pateat, Leather Top ..... ℔ gr. $4 90
Peg Pate t, Pla n Top ..... ℔ gr. $3.45
S wing, Brass Ferrule ..... ℔ gr. $1.50
Saddlers', Brass Ferrule ..... ℔ gr. $1.35
Pez, Common ..... ℔ gr. $1 25
Brad, Common ..... ℔ gr. $1.35

Halters and Ties—

Covert Mfg. Co., Web and Rope ... 45&2%
Covert's Saddlery Works, 98 list. 60&10%

Hammers—

Handled Hammers—

Heller's Machinists' ..... 40@40&5%
Magnetic Tack, Nos. 1, 2, 3, $1.25, $1.50, $1.75 ..... 40&10%
Peez, Stow & Wilcox ..... 40@40&5%
Fayette R. Plumb:
Artisans' Choice, A. E. Nail .. 40&12½%
Engineers' and B. S. Hand 60%
Machinists' Hammers 60%
A. E. & A. E., Bell Face Nail .. 40&12½%
Other Nail Hammers 50%
Sargent's C. S. New List ..... 45@50%

Heavy Hammers and Sledges—

3 ℔ and under.....℔ ℔ 45¢)
3 to 5 ℔.....℔ ℔ 36¢ } 80&20@
Over 5 ℔.....℔ ℔ 30¢)
Wilkinson's Smiths'.....9½¢@10¢ ℔ ℔

Handcuffs and Leg Irons

See *Police Goods.*

Handles—

Cross-Cut Saw Handles—

Atkins'.....40%
Champion.....45@45&10%
Ely's Perfection.....℔ doz. $3.00

Iron, Wrought or Cast—

Barn Door, ℔ doz. $1.40.....20&5%
Bronze Iron Drop Latches.....℔ doz. 60¢
Chest, Sargent's list..50&10@50&10&10%
Door or Thumb:

Nos.	0	1	2	3	4
℔ doz.	$0.90	1.00	1.08	1.35	1.50

60&10&10@70%
Jap'd Store Door Handles—Nuts, $1.02; Plate, $1.10; no plate, $0.88.....10%
Roggin's Latches.....℔ doz. 28¢@30¢

Wood—

Auger, assorted.....℔ gr. $2.25@$2.50
Auger, large.....℔ gr. $2.75@$3.00
File, assorted.....℔ gr. $1.25@$1.40
Brad Awl.....℔ gr. $1.75@$2.00
Apple Firmer Chisel, ass'd ℔ gr.2.25@2.50
Apple Firmer Chisel, large ℔ gr.2.75@3.00
Hickory Firmer Chisel, ass'd ℔ gr..... $2.25@2.50
Hickory Firmer Chisel, large ℔ gr..... $2.50@2.75
Socket Firmer Chisel,ass'd ℔ gr.1.25@1.50
Socket Framing Chisel ass'd ℔ gr2.50@2.75
Hammer, Hatchet, Axe, &c.....50&10%
Hoe, Rake and Fork.. 60&10@60&10&5%
Shovel and Spade, Wood D H'dle,.60&10%
Hand Saw, Varnished, ℔ doz. 75@80¢; not Varnished.....55@60¢
Plane Handles:
Jack, ℔ doz. 23@25¢; Jack Bolted.... 55@60¢
Fore, ℔ doz. 35@38¢; Fore, Bolted... 70@75¢

Hangers—

Barn Door, New Pattern, Round Groove, Regular:

Inch.....	3	4	5	6	8
℔ doz....	$1.28	1.68	2.16	2.64	3.30

Barn Door, New England Pattern, Check Back, Round Groove, Regular:

Inch.....	3	4	5	6
℔ doz.....	$2.86	3.74	4.84	6.16

Bigelow & Dowse Co.:
Paragon, No. 1, $3.50; No. 2, $4.50; No. 3, $5.50 ℔ doz.
Chicago Spring Butt Co.:
Friction.....35@35&10%
Oscillating.....35@35&10%
Big Twin.....35@35&10%
Chisholm & Moore Mfg. Co.:
Advance.....60&10%
Cleveland.....60&10%
Baggage Car Door.....50%
Elevator.....40%
Railroad.....55%
Cronk Hanger Co.:
Roller Bearing.....70%
Steel Covered.....60&10%
Lane Bros.:
Parlor, Standard.....40&10%
Barn Door, Standard.....60&10%
Covered.....60&10%
Cycle, ℔ doz. $12.00.....33⅓&5%
No. 50.....60&5%
Parlor Door, New Model.....40&5%
Lawrence Bros.:
Crown.....60&10%
New York.....60&10@60&10&5%
Sterling.....60&10%
McKinney Mfg. Co.:
No. 2, Standard, $18.....60&10%
No. 1, Special, $13.....60&10%
Payson Mfg. Co.:
Pendulum, No. 533.....$2.49
E. C. Stearns & Co.:
Davis Parlor Door.....50@50&5%
Gem Parlor Sliding Door....50&10%
Challenge.....50@50&5%
Steel Single Track Parlor, $6....50%
Royal Parlor Door.....50%
Warner's Pat.....20&10&10%
Warner's Imp'd Single.....40&10%
Stowell Mfg. and Foundry Co.:
Badger.....60&10%
Baggage Car Door.....33⅓&5%
Climax Anti-Friction.....55&5%
Elevator.....40%
Interstate.....60&15%
Magic.....50&10%
Matchless.....60&10%
Nansen.....60&10%
Parlor Door.....50&10%
Railroad.....55&5%
Street Car Door.....50&10%
Steel, Nos. 300, 400, 500.....45&10%
Wild West.....50&5%
Zenith for Wood Track.....55&5%
Taylor & Boggs Foundry Co.:
Kidder's.....50@50&10%
Terry Mfg. Co.:
Ideal.....70%
Modern.....70%
Modern, Covered.....70%
Safety.....70%
Shield.....70%
Solid.....70%
Wrought.....70%
Van Wagoner & Williams Hdw Co.:
American Trackless.....33⅓&10%
Wilcox Mfg. Co.:
Aurora Steel Endless.....60%
Bike Roller Bearing....60&10&10%
Bike Steel Endless.....60&10&10%
C. J. Roller Bearing.....60&10&10%
Cycle Ball Bearing.....50&10%
Dye Steel.....60&10%
Economical Single Track.50&10&5%
L. T. Roller Bearing.....70%
New Era.....50&10%
New Richards.....60%
O. K. Roller Bearing.....70%
Prindle Improved.....60&10%
Richards' Improved.....60&10%
Richards' Single Track.....50&10%
Wilcox Dwarf Roller Bearing.....40&10%
Wilcox-Ives.....60&10%
Wilcox Tandem Roller Bearing.....60&10%
Wilcox Trolley Ball Bearing.....40&10%
Wilcox Trolley Roller Bearing..50%
Wilcox Trolley Roller Bearing, Fire.....40&10%
Wood Track.....60%

Extra 5@10% often given.

Harness Menders—See *Menders.*

Harness Snaps—See *Snaps.*

Hasps—

McKinney's Perfect Hasp, ℔ doz. $1.10 40&10%
Wrought Hasps, Staples, &c.—See *Wrought Goods.*

Hatchets—

Blood's, Hunt's, Plumb's, Underhill's, etc.....40&12½@50&5%
Cheaper Brands.....50&10@60%

Hay and Straw Knives—

See *Knives.*

Hinges—

Blind Hinges—

Clark Mfg. Co.:
No. 1 Blind Hinge, Old Pattern, "Special," .....80&10&5%
No. 1 Blind Hinge, "Diamond" (with tip).....80&10&5%
No. 1 Blind Hinge "Cottage" (with tip).....50&10&10%
Nos. 1, 3, 5 Blind Hinges, regular 1668 old Pattern.....80&10%
Nos. 1, 3, 5 Blind Hinges, "Victor" (with double tip).....80&10%
No. 50 Blind Hinge, both "Noiseless" and "Empire".....80%
No. 40—60—65 Blind.....80%
Lull & Porter Old Style Shutter.80&10%
Dixie L. & P. Shutter.....80&10%
Buffalo Reversible Shutter.....80&10%
Mortise Gravity Blind.....50%
Huffer.....50&10&10@60%
Parker.....75&10@75&10&5%
North's Automatic Blind Fixtures, No. 2, for Wood, $9.00; No. 3, for Brick, $11.50.....10%
Reading's Gravity.....75&10%
Sargent's, Nos. 1, 3, 5, 11, 13..75@75&10%

Wrightsville H'dware Co.:
Acme, Lull & Porter.....80&10%
Buffalo Gravity Locking, Nos. 1, 3 and 5.....80&10&5%
Champion Gravity Locking, No. 75.....80&10&10%
1868, Old Pat'n, Nos. 1, 3 & 5...80&10%
Tip Pattern, Nos. 1, 3 and 5..80&10&5%
Double Locking, Nos. 20 and 25....75%
Empire, Nos. 101 and 103.....80%
Niagara Gravity Locking, Nos. 1, 3 and 5.....80&10%
Noiseless, Nos. 50, 60, 65 and 55....80%
O. S. Lull & Porter.....80&10&5%
Pioneer, Nos. 060, 45 and 5½....75&5%
Steamboat Gravity Locking, No. 10.....80&10&5%
Stanley's Steel Gravity Blind Hinges, ℔ doz. sets $1.30.....40&10%

Gate Hinges—

Clark Mfg. Co.'s Nos. 1 and 2..70&10&5%
Clark Mfg. Co.'s No. 3.....70%
N. E., ℔ doz. $7.80....60&10@60&10&5%
N. E. Reversible, ℔ doz. $5.60.....60&10@60&10&5%
N. Y. State, ℔ doz. $4.90.....60&10@60&10&5%
Shepard's, Nos. 1, 2, 3..60&10@60&10&5%
Western, ℔ doz. $4.20, 60&10@60&10&5%

Spring Hinges—

J. Bardsley:
Bardsley's Patent Checking.....15%
Bommer Bros.:
Bommer's.....40%
Chicago Spring Butt Co.:
Chicago.....30%
Garden City Engine House.....30%
Keene's Saloon Door.....30%
Payson Mfg. Co.:
Oblique, Dbl. Acting.....50@50&5%
E. C. Stearns & Co.:
Nos 45 and 51.....70%
Stover Mfg. Co.:
Ideal, No. 16, Detachable, ℔ gr..... $2.50
Ideal, No. 4.....℔ gr. $9.00
New Idea No. 1.....℔ gr. $9.00
New Idea, Double Acting.....45%
Van Wagoner & Williams Hdw. Co.:
Acme.....30&5%
American.....30%
Columbia, No. 14.....℔ gr. $8.00
Columbia, No. 18.....℔ gr. $24.00
Crown.....30%
Gem.....30%
Knoxall.....℔ gr. $9.00
Oxford.....30%

Extra 10% often given on most of these Hinges.

Wrought Iron Hinges—

Strap and T Hinges, &c., list Mar. 15, 1898:
Light Strap Hinges..75, 10&5%
Heavy Strap Hinges...80&10%
Light T Hinges.....70%
Heavy T Hinges.....75&5%
Extra Heavy T Hinges.....80%
} Extra 20@25 &5%
Plate Hinges, { 6 to 12 in. ℔ ℔ 5¢ Providence { 14 to 36 in. ℔ ℔ 4¢
Rolled Blind Hinges, Nos. 32 and 34 50&10@50&10&5%
Rolled Plate.....70&10@70&10&5%
Screw Hook and Strap. { 6 to 12 in.....℔ ℔ 2½¢ { 14 to 20 in.....℔ ℔ 2 ¢ { 22 to 36 in.....℔ ℔ 1¾¢

Hoes—

Eye—

D. & H. Scovil.....35@35&5%
Scovil and Oval Pattern.....60@60&10%
Grub.....75&10%

Handled—

Field and Garden.....80&2%
Ladies', Boys', Toy and Onion..80&5&2%
Street and Mortar.....75&25&2%
Cotton.....80&10%
Planters'.....80&15&2%
Weeding.....75&5&2%
Ft. Madison Crucible Garden Hoe75&20%
Ft. Madison Crescent Cultivator Hoe, per doz.....$3.50
Ft. Madison Mattock Hoe, ℔ doz....$3.75
Ft. Madison Sprouting Hoe, ℔ doz. $4.50
Ft. Madison Dixie Tobacco Hoe.....80&10&2%
Warren Hoe.....60&10%

Hog Rings and Ringers—

See *Rings and Ringers.*

Hoisting Apparatus—

See *Machines, Hoisting.*

Hollow Ware—

See *Ware, Hollow.*

Holders—Bag—

Sensible Bag and Twine.....50%

Bit—

Angular, ℔ doz. $24.00.....45&10%
Extension.
Barber's, ℔ doz. $15.00.....45&10%

File and Tool—

Nicholson File Holders and File Handles.....33⅓%

Hooks—

Cast Iron—

Bird Cage, Reading.....} 60&10&10@
Bird Cage, Sargent's List. } 70%
Clothes Line, Sargent's List.....50&10%
Ceiling, Sargent's List.....50&10%
Clothes Line, Stowell's .....70&5%
Clothes Line, Reading List 65&10@65&10&10%
Coat and Hat, Stowell's .....70&5%
Coat and Hat, Reading 60&10@60&10&10%
Coat and Hat, Sargent's List.....50&10%
Coat and Hat, Wrightsville list..70&10%
Harness, Reading List.....70&10@75%

Wire—

Atlas, Coat and Hat.....50@50&10%
Belt.....80&10@80&20%
Buffalo Belt Fasteners.....40%
Wire Coat and Hat:
Acme.....60@60&10%
B. B.....75@75&10%
Gem.....60⅔%
Bright Wire Goods—See *Wire.*

Wrought Iron—

Cotton.....℔ doz. $1.25
Picture, T. & S. Mfg. Co.....75%
Tassel, T. & S. Mfg. Co.....50&10%
Wrought Staples, Hooks, &c.—See *Wrought Goods.*

Miscellaneous—

Bush, Light, ℔ doz. $5.00: Medium, $5.50: Heavy, $6.00
Covert's Self Locking Gate and Door Hook, 4 in. ℔ gross $13.00; 6 in. $17.20.....60&20%
Crown Picture.....60%
Fish Hooks, American.....60@60&10%
Grass, No. 2, $1.65; No. 3, $1.80; No. 4.....$2.00
Potato and Manure.....75&15%
Hooks and Eyes—Brass.....70&10&75%
Hooks and Eyes—Malleable Iron..75&10%
Whiffletree, ℔ ℔.....4¾¢
Bench Hooks—See *Bench Stops.*
Corn Hooks—*See Knives, Corn.*

Horse Nails—See *Nails, Horse.*

Horseshoes—

See *Shoes, Horse.*

Hose, Rubber—

Garden Hose, ¾-inch:
Competition.....℔ ft. 4@4½¢
3-ply Standard.....℔ ft. 5½¢
4-ply Standard.....℔ ft. 6½¢
3-ply extra.....℔ ft. 6½¢
4-ply extra.....℔ ft. 7½¢
High Grade.....℔ ft. 8½@9½¢
Cotton Garden, ¾ in., coupled:
Fair quality.....℔ ft. 7¢
Good quality.....℔ ft. 8¢

Irons—

Sad—

From 4 to 10.....℔ ℔ 2@2½¢
B. B. Sad Irons.....℔ ℔ 2½@2¾¢
Chinese Laundry .....℔ ℔ 3½@4¢
Chinese Sad .....3@3½¢
Crown Improved, Pol., ℔ doz. $6.50; Nickel, $7.00
Troy Pol. Irons.....℔ doz. $3.00
Mrs. Potts', per set:

No. 50	55	60	65
61@64¢	57@60¢	71@74¢	67@70¢

New England Pressing.....℔ ℔ 2½@3¢
Sensible Sad Irons, Pol., ℔ doz. $6.50; Nickel, $7.00.

Soldering—

Soldering Coppers.....℔ ℔ 21@25¢
Covert Mfg. Co.....35&2%

Pinking—

Pinking Irons.....℔ doz. 55@60¢

Jack Screws—See *Screws.*

Jacks, Wagon—

Covert Mfg. Co., Steel.....45&2%
Daisy, ℔ doz. $12.00.....70%
Lockport.....40@40&10%
Victor, ℔ doz. $20.00.....60&20%
Lane's Steel.....30%

Kettles—

Brass, Spun, Plain, list Jan. 10, '99, 15@20%
Enameled and Tea—See *Ware, Hollow.*

Knife Sharpeners—

See *Sharpeners, Knife.*

Knives—

Butcher, Sho- &c.—

Dick's Butcher Knives.....40%
Foster Bros.' Butcher, &c.....40%
Nichols' Butcher Knives.....50%
Table and Pocket Cutlery and John Wilson's Butcher Knives—Net prices.
Hay and Straw—See *Hay Knives.*

Corn—

Ft. Madison Cut-Easy, ℔ doz.....$3.00

Drawing—

Standard list.....75&10@80%
Adjustable Handle.....25@33⅓%
Bradley's.....33%
Douglass.....75@75&10%
Watrous.....30&10@40%
L. & I. J. White.....20&5@25%
Cautelo's Folding.....50@50&5%

Hay and Straw—

Blizzard.....$5.50@6.00
Iwan's Sickle Edge.....℔ doz. $10.50
Lightning, from Jobbers.....$5.00@6.00

Mincing—

Buffalo Adjustable, ℔ doz. $3.00.....40%
Knapp & Cowles.....60%
Smith's, ℔ doz., Single, $2; Double, $3 45&50%
Sensible, Nos. 10, 20, 40 and 60..

Miscellaneous—

Farriers'.....℔ doz. $2.00@3.00

Knobs—

Base, 2¼-in., Birch, Rubber tip, ℔ gro. $1.25@1.40
Bardsley's Wood Door, Shutter, &c....15%
Carriage, Jap., ℔ gr. 80¢.....60&10%
Door, Mineral.....℔ doz. 60@62¢
Door, Por. Jap'd.....℔ doz. 65@67¢
Door, Por. Nickel.....℔ doz. $1.70@1.80
Drawer, Porcelain....60&10@60&10&10%
Picture, Sargent's.....70&10%
Shutter, Porcelain.....70@70&10%
Yale & Towne Wood, list Dec., '85....40%

Ladles—Melting—

P., S. & W.....35&10@40%
Reading.....50&10%
Sargent's.....60@60&10%

Lanterns—Tubular—

	℔ doz.	
Regular Tubular	$7.00	40&5@40&
Side Lift Tubular	$7.50	10&5%
Square Lift Tubular	$7.50	

Bull's Eye Police—

2¾-inch flash light.....℔ doz. $4.00
3-inch flash light.....℔ doz. $4.50
2¾-inch regular.....℔ doz. $3.60
3-inch regular.....℔ doz. $3.90

Lawn Mowers—

See *Mowers, Lawn.*

Leaders, Cattle—

Covert Mfg. Co.....45&2%
Peck, Stow & W. Co.....60&5%
Sargent's.....70&10@70&10&10%

Lemon Squeezers—

See *Squeezers, Lemon.*

Lifters, Transom—

Excelsior.....60@60&10%
Payson's:
Solid Grip Nos. 303 and 304, ℔ 100, $11.00
Other sizes.....70&10%
Shaw's.....60@60&10%

Lines—

Ossawan Mills.
Crown Solid Braided Chalk.....33⅓%
Mason's, No. 0 to No. 5.....33⅓%
Silver Lake Braided Chalk, No. 0, $6.00; No. 1, $6.50; No. 2, $7.00; No. 3, $7.50 ℔ gr.....30%

Wire Clothes..Nos.	18	19	20
100 feet	$2.40	2.15	1.90
75 feet			$1.35

Locks, &c.—Cabinet—

Cabinet Locks.....45&2%

Door Locks, Latches, &c.—

[Net prices are very often made on these goods.]

Plate.....33⅓&5%
Reading.....60@60&10%
R. & E. Mfg. Co.....60&10@70%
Sargent & Co.....60&10@60&10&10%
S. B. & Co., Locks, Knobs, &c..40@40&5%

Elevator—

Stowell's.....33⅓%

Padlocks—

Wrought Iron, list Dec. 8, '97.75&10@80%
Dog Collar, S. B. Co.....40%
E. T. Fraim:
Cast Iron, Scandinavian.....90&40%
Mal. Iron, 120 line.....90&10%
Mal. Iron, 110 and 125 line.....65%
All others.....50&5%
Scandinavian.....90&40@90&40&10%
S. B. & Co.....40%

Sash, &c.—

Fitch's Patent.....70&10%
Ives' Patent.....66⅔&2%
Payson's Perfect.....70%
Payson's Signal.....70&10%
Reading.....60&10&10@70%

Machines—

Boring—

Without Augers.

	Upright.	Angular.
Boss, Carpenters',	$3.50	
Boss, Ship Bldrs',	3.75	
Douglas	2.50	$3.00
Jennings'	2.50	3.00
Millers' Falls		5.75
Snell's, Rice's Pat.	2.50	2.75

Fluting—

Crown Jewel, 6 in..... $2.50@2.75

Hoisting—

Moore's Anti-Friction Differential Pulley Block.....30%
Moore's Hand Hoist, with Lock Brake 20%
Maris & Beckley (Teal Patent).....40%
See also *Blocks.*

Washing—

Wayne American, No. 2, ₱ doz. $27.50
Western Star, No. 2, ₱ doz. 27.50
Western Star, No. 3, ₱ doz. 30.00
St. Louis, No. 41, ₱ doz. 68.00
Carload lots 10% off, freight allowed.

Mallets—

Hickory.....50@50&10%
Lignumvitæ.....50@50&10%
Tinners', Hickory and Applewood.....
₱ doz....35@60¢
Fiber Head, Stearns'.....25%

Mattocks—

Standard List.....75&10%

Measures—

Peck and Half Peck, See *Ware, Stand-and Fiber.*

Meat Cutters—

See *Cutters, Meat.*

Menders—

Centaur Harness Menders, ₱ doz. $6.00.....20%
Jones' Hose Menders, ₱ doz., ½ in., 40¢; ¾ in., 50¢; 1 in., 85¢.....50%
Victor Complete ...ose Menders, ₱ doz. $3.50.....25%

Milk Cans—See *Cans, Milk.*

Mills— Coffee—

Box and Side, List, Jan. 1, '88.....60&10@60&10&10%
Net prices are often made on some goods which are lower than above discounts.
Enterprise Mfg. Co., list Jan. 17, '93..30%
National, list Jan. 1, '94.....30%
Parker's Columbia and Victor....60&10%
Parker's Upright.....30&10@40%
Swift, Lane Bros.....33⅓%

Mincing Knives—

See *Knives, Mincing.*

Molasses Gates—

See *Gates, Molasses.*

Money Drawers—

See *Drawers, Money.*

Mowers, Lawn—

Net prices are very frequently quoted.

	10	12	14	16-inch
Cheap	$1.65	$1.70	$1.75	$1.80
Medium	2.50	2.75	3.00	3.25
High Grade	3.50	3.75	4.00	4.25

Pennsylvania and Continental.....60&10&10%

Philadelphia:
All Styles except A and E.....70&10%
Style A, all Steel.....60&10%
Style E, Low Wheel.....60&10%
Style E, High Wheel.....70&10%

Muzzles—

Safety.....₱ gr. $12.00@$13.50

Nails—

Cut and Wire. See *Trade Report.*
Wire Nails and Brads, Papered, List, May 1, '92.....85& @85&10&5%
Hungarian, Finishing, Upholsterers', &c. See *Tacks.*

Horse—

Nos.	6	7	8	9	10	
A. C.	25¢	23¢	22¢	21¢	21¢	40&10%
American	9¼	9¼	9¼	9¼	9¼	...net
Ausable	28¢	26¢	25¢	24¢	23¢	40&10&2%
Capewell	19¢	18¢	17¢	16¢	16¢	10&5%
C. B. K.	25¢	23¢	22¢	21¢	21¢	..40%
Champlain	28¢	26¢	25¢	24¢	23¢	40&5&2%
Clinton Fin.	19¢	17¢	16¢	15¢	14¢	30&5%
Maud S.	25¢	23¢	22¢	21¢	21¢	50&10&5%
Neponset	23¢	21¢	20¢	19¢	18¢	..40%
Putnam	23¢	21¢	20¢	19¢	18¢	.33⅓%
Vulcan	23¢	21¢	20¢	19¢	18¢	..25%

Picture—

Brass Head, Combination list.....50&10%
Brass Head, Sargent's list.....50&10@5%
Porcelain Head, Combination list.40&10%
Porcelain Head, Sargent's list.....50&10%
Crown.....50&10%
Niles' Patent.....40%

Nippers, See *Pliers and Nippers.*

Nut Crackers—

See *Crackers, Nut.*

Nuts—List Dec. 18, 1882.

Cold Punched. Off list.
Mfrs. or U. S. Standard.
Hexagon, plain.....$6.50
Square, plain.....6.10
Square, C. T. & R.....6.20
Hexagon, C. T. & R.....7.10
Hot Pressed.
Mfrs., U. S. or Nar. Gauge Standard.
Square.....$6 40
Hexagon.....7.20

Oakum—

Best or Government.....₱ ℔ 5¾¢
Navy.....₱ ℔ 4¾¢
U. S. Navy.....₱ ℔ 5¼¢
Plumbers' Spun Navy.....2¾¢
F. O. b New York. In carload lots ¼¢ ₱ ℔ off.

Oil Tanks—See *Tanks, Oil.*

Oilers—

Brass and Copper.....50&10@60%
Zinc and Tin.....75@75&10%
Malleable, Hammers' Improved, No. 1, $3.60; No. 2, $4; No. 3, $4.40 ₱ doz. 20%
Malleable, Hammers' Old Pattern, same list.....50&10%
Wilmot & Hobbs Mfg. Co.....70&10@75%

Openers, Can—

French.....₱ doz. 35¢
Iron Handle.....₱ doz. 60@75¢
Kloodike, Rogers & Bros., ₱ grs $6.50
National, ₱ gro.....$1.75@$2.00
Sardine Scissors.....₱ doz. $2.00@$2.10
Sprague, Iron or Wood Handles.....
₱ doz. 40@45¢
Stowell's.....75&10%
Streeter's:
Sensible, Japanned.....₱ gr. $3.50
Sensible, Nickel.....₱ gr. $5.50
Surprise.....₱ gr. $2.00
New Sprague, Metallic H'dle ₱ gr. $3.50
New Sprague, Wood H'dle..₱ gr. $4.50

Packing—

Rubber—

Standard, fair quality.....70&10@75%
Inferior quality.....75&10@80%
Extra.....60&5@60&10&5%
Jenkins' Standard, ₱ ℔ 80¢....25@25&5%

Miscellaneous—

American Packing.....9¢ @ 10¢ ₱ ℔
Cotton Packing.....13¢ @ 14¢ ₱ ℔
Italian Packing.....10½¢ @ 11½¢ ₱ ℔
Jute.....5¢ @ 5½¢ ₱ ℔
Russia Packing.....12¢ @ 13¢ ₱ ℔

Pails—

Creamery—

S. S. & Co., with gauges.. No 1 $5.25; No. 2, $5.50 ₱ doz.....15¢

Galvanized—

Inch	10	12	14
Water, Standard, ₱ gro	$16.50	$18.50	$20.50
Water, Competition, ₱ gro	$14.00	$16 00	$18.00
Fire, ₱ gro	$19.00	$22.50	$25.50
Well, ₱ gro	$21.00	$22.00	$25.00

Pans—

Dripping—

Large Sizes.....₱ ℔ 8½@8¾¢
Small sizes.....₱ ℔ 8 @8½¢

Fry—

Standard List.....80@80&10%

No.	0	1	2	3
₱ doz.	$3.00	$3.75	$4.25	$4.75
No.	5	6	7	8
₱ doz.	$6.00	$7.00	$8.00	$9.00

Acme Fry Pans.....75@75&10%

Roasting and Baking—

Columbian, S. S. & Co., Nos. 5, ₱ doz., $10; 10, $11.50; 20, $13; 30, $15....60%
Simplex No. 08, ₱ doz. $7.00; No. 09, $8.50.....60%

Paper—

Building Paper—

	Per roll
Rosin Sized Sheathing:	500 sq. ft.
Light wt., 20 sq. ft. to lb	$0.35@0.40
Medium wt., 12 sq. ft. to lb.	$0.55@0.60
Heavy wt., extra quality..	$0.95@1.05
Barrett's Water Proof Sheathing	$1.35@1.75
Medium Grades Water Proof Sheathing	$0.80 to 1.25
Deafening Felt, 9, 6 and 4½ sq. ft. to lb., ₱ ton	$42.50

Tarred Paper.

1 ply (roll 300 sq. ft.), ₱ ton.... $35@37
2 ply, heavy, ₱ roll 100 sq. ft.....80¢
2 ply, light, ₱ roll 100 sq. ft.....75¢
3 ply, heavy, ₱ roll 100 sq. ft.....$1.20
3 ply, light, ₱ roll 100 sq. ft.....$1.00

Sand and Emery—

List April 19, 1886.....50&10&5@60%

Parers—

Apple—

Advance.....₱ doz. $4.50
Baldwin.....₱ doz. $5.00
Bonanza.....each $5.00
Dandy.....each $7.50
Eureka, 1888.....each $16.00
Family Bay State.....₱ doz. $12.00
Improved Bay State ₱ doz. $27.00@30.00
New Lightning.....₱ doz. $5.50
Penn.....₱ doz. $4.75
Perfection.....₱ doz. $4.00
Reading 72.....₱ doz. $4.00
Reading 78.....₱ doz. $7.00
Turn Table.....₱ doz. $4.50
White Mountain.....₱ doz. $4.00

Potato—

Saratoga.....₱ doz. $5.50
White Mountain.....₱ doz. $4.50

Paris Green—

Arsenic kegs or casks.....₱ ℔ 12 ¢
Kegs of 100 to 175 pounds.....₱ ℔ 12½¢
Kits of 14, 28 and 56 pounds..₱ ℔ 13½¢
Paper boxes 2 to 5 pounds.....₱ ℔ 13½¢
Paper boxes 1 pound.....₱ ℔ 14 ¢
Paper boxes ½ pound.....₱ ℔ 15 ¢
Paper boxes ¼ pound.....₱ ℔ 16 ¢

Picks and Mattocks—

Railroad or Adze Eye, 5 to 6, $12.00; 6 to 7, $13.00.....75&10%

Pinking Irons—

See *Irons, Pinking.*

Pins—

Bow—

1¼-inch.....₱ gro. $4.50@$5.00
2-inch.....₱ gro. $5.00@$5.50

Escutcheon—

Brass.....70@70&10%
Iron, list Nov. 11, '85.....60@60&5%

Pipe, Cast Iron Soil—

Factory Shipments.

Standard.....75&5@75&10%
Extra Heavy.....75&10&5@80%
Fittings.....80@80&5%

Pipe, Wrought—

Factory Shipments.

List Jan. 29, '95.
1¼ and under Plain..55% } Carload lots extra five 10's and 7½%; less than carloads extra five 10's and 2½%
1¼ and under, Galv...45%
1½ and over, Plain..65%
1½ and over, Galv....50%

Cold Drawn Seamless Steel Tubing..60%

Planes and Plane Irons—

Wood Planes—

Molding.....45@45&5%
Bench, First quality.....50&5@50&10%
Bench, Second quality.....50&10&5@60%
Bailey's (Stanley R. & L. Co) 50&10&10@50&10&10&10%

Iron Planes—

Bailey's (Stanley R. & L. Co) 50&10&10@50&10&10&10%
Chaplin's Iron Planes.....50&10%
Miscellaneous Planes (Stanley R. & L. Co.).....25&10&10@25&10&10&10%
Sargent's.....60&10&10@70%

Plane Irons—

Standard List.....30&10@30&10&10%
Auburn Thistle.....30&10@30&10&10%
Buck Bros.....30%
Butcher's.....$5.00@5.25 to £
Stanley R. & L. Co...50&10@50&10&10%
L. & I. J. White.....20&5@25%

Plates—

Felloe.....₱ ℔ 6¢@6¼¢
Self-Sealing Pie Plates (S. S. & Co.), ₱ doz. $2.00.....50%

Pliers and Nippers—

Acme Nippers.....50%
Barnard's:
Parallel Pliers, &c.....33⅓%
Paragon Pliers.....50%
Lodi Pliers.....50%
Elm City Fence Pliers.....35%
Button's.....70&10@70&10&5%
Cronk's Patent Pliers.....60%
Cronk's Stubb's Pat. Pliers.....50&10%
Cronk's Button Pattern.....70%
Cronk's Como. Cutting and Gas Pliers, ₱ doz. $20.00, 60%

Gas Pliers, ₱ doz.:

7-in.	8-in.	9-in.	10-in.
Best.....	$5.25	$6.00	$6.50
Good.....	$2.50	2.75	3.00	3.50

Heller's Farriers' Pincers and Tools.....40@40&5%
Morrill's Parallel, ₱ doz. $12.00...30&5%
P., S. & W. Cast Steel.....50@50&5%
P., S. & W. Tinners' Cutting Nippers, add 6%.....10%
Utica Drop Forge & Tool Co.:
Combination Pliers.....40&5%
Side Cutting Pliers.....40&5%
Hall Patent Nipper.....40&5%
Round and Flat Nose Pliers.....40&5%
End Cutting Pliers.....40&5%
Royal Blue.....40&5%
Glass Pliers.....40&5%
Burner Pliers.....40&5%

Plumbs and Levels—

Plumbs and Levels...75&10&10@80&10%
Cook's.....40&10&10@40&10&10&5%
Pocket Levels.....75&10&10@75&10%
Stanley R. & L. Co.....70&10&10@75&10%
Stanley's Duplex.....25&10@25&10&10%
Woods' Extension.....33⅓%

Poachers, Egg—

Buffalo Steam Egg Poachers, ₱ doz., No. 1, $3.00; No. 2, $9.00; No. 3, $9.00; No. 4, $12.00.....50%

Pokes, Animal—

Bishop's American.....₱ doz. $2.75
Bishop's I. X. L.....₱ doz. $5.50
Bishop's Steel Monarch.....₱ doz. $4.25
Bishop's Pioneer.....₱ doz. $3.25
Ironclad, Sunbury, with strap, ₱ doz. $4.25
Ironclad, Sunbury, with snap, ₱ doz. $4.00
Metallic Horse Poke.....₱ doz. $5.00

Police Goods—

Bean's.....25%
Tower's.....25%

Polish—Metal—

Prestoline Liquid, No. 1 (¼ pt.), ₱ doz. $3.00; No. 2 (1 qt.), $9.72.....40%
Prestoline Paste.....33⅓@40%
U. S. Metal Polish Paste, 3 oz. boxes, ₱ doz. 50¢; ₱ gr. $4.50; ½ ℔ boxes, ₱ doz. $1.25; 1 ℔ boxes, ₱ doz. $2.25.
U. S. Liquid, 8 oz. cans, ₱ doz. $1.25; ₱ gr. $12.00.
Barkeepers' Friend Metal Polish, ₱ doz. $1.75; ₱ gr. $18.00.
Wynn's White Silk, ½ pt. cans, ₱ doz. $1.50

Stove—

Joseph Dixon's, ₱ gr. $5.75.....10%
Dixon's Plumbago.....₱ ℔ 8¢
Fireside.....₱ gr. $2.50
Gem, ₱ gr. $4.50.....10%
Japanese.....₱ gr. $3.50
Jet Black.....₱ gr. $3.50
Wynn's Black Silk, 5 ℔ pail.....₱ ℔ 12¢
Wynn's Black Silk, ½ ℔ box, ₱ doz. $1.00
Wynn's Black Silk, 5 oz. box, ₱ doz. $0.75
Wynn's Black Silk, 8 oz. liq., ₱ doz. $1.00

Poppers, Corn—

Round or Square.
1 qt.....₱ doz. 60¢; ₱ gr. $6.00
1½ qt.....₱ doz. 70¢; ₱ gr. 7.50
2 qt.....₱ doz. $1.10; ₱ gr. 11.50.
Quincy Corn Popper, 1 qt., ₱ gr. $17.00; 2 qt., $22.00.

Post Hole and Tree Augers and Diggers—

See also *Diggers, Post Hole, &c.*

Potato Parers—

See *Parers, Potato.*

Pots—

Glue—

Enameled.....40&10@50%
Tinned.....40&10@50%

Powder—

In Canisters:
Duck, 1 ℔ each.....45¢
Fine Sporting, 1 ℔ each.....75¢
Rifle, ½ ℔ each.....15¢
Rifle, 1 ℔ each.....25¢
In Kegs:
Duck, 6¼-℔ kegs.....$2.25
Duck, 12½-℔ kegs.....$4.25
Duck, 25-℔ kegs.....$8.00
Rifle, 6¼-℔ kegs.....$1.25
Rifle, 12½-℔ kegs.....$2.25
Rifle, 25-℔ kegs.....$4.00
King's Smokeless: 20&10&2%
Keg (25 ℔ bulk).....$20 00
Half Keg (12½ ℔ bulk).....$10.25
Quarter Keg (6¼ ℔ bulk).....$5.25
Canister (1 ℔ bulk).....$0.90
Case, 1 ℔ Canisters (50 ℔ bulk).....$45.00
Half Case, 1 ℔ Canisters (25 ℔ bulk).....$22.75
King's Semi-Smokeless: 20&5%
Keg (25 ℔ bulk).....$16.00
Half Keg (12½ ℔ bulk).....$8.25
Quarter Keg (6¼ ℔ bulk).....$2.75
One Pound Can, bulk.....$0.50

Presses—

Fruit and Jelly—

Enterprise Mfg. Co.....25@30%

Pruning Hooks and Shears—See *Shears.*

Pullers Nail—

Crown, ₱ doz. $18.00.....50%
Crown France, ₱ doz. $15.00.....50%
Giant, No. 1, ₱ doz. $18; No. 2, $16.50; No. 3, $15.....40%
National, ₱ doz. $24.00.....40%

Pelican, ₱ doz. $9.00.....15&10%
Scranton, No. 1 and 2, ₱ doz.. ...$10.00
Scranton, No. 3, ₱ doz.....$9.50

Pulleys—

Hay Fork, Swivel or Solid Eye, ₱ doz. $1.50
Hay Fork, Stowell's Anti-Friction, 5-in. Wheel, ₱ doz. $12.00.....40%
Hay Fork, Stearns' No. 15 & 25 ₱ doz. $1.75
Hay Fork, Stearns' No. 35 & 45 ₱ doz. $2.00
Hay Fork, Stearns' Nos. 56 & 66. ...$2.25
Hot House, Awning, &c.....60@60&10%
Japanned Clothes Line.....60@60&10%
Japanned Screw.....70&10&10%
Japanned Side.....70&10&10%
Stowell's Ceiling or End, Anti-Friction 40%
Stowell's Dumb Waiter, Anti-Friction 50%
Stowell's Electric Light..... ....33⅓%
Stowell's Side, Anti-Friction.....50%
Sash (Auger Mortise):
Common Sense, 1¾ in., ₱ doz., 18¢; 2 in., 20¢.
Empire.....1¾ in., 17¢; 2 in., 19¢
L. C.....1¾ in., 15¢; 2 in., 17¢
Ideal No. 13.....1¾ in., ₱ doz., 15½¢
Improved.....1¾ in., 17¢; 2 in., 19¢
Niagara.....1¾ in., 16¢; 2 in., 17¢
No. 26, Troy.....1¾ in., 15¢; 2 in., 17¢
Star.....1¾ in., 16¢; 2 in., 17¢
Acme.....1¾ in., 18¢; 2 in., 19¢
Tackle Blocks—See *Blocks.*

Pumps—

Cistern, Best Makers.....70@75%
Pitcher Spout, Best Makers..75&10@80%
Pitcher Spout, Cheaper Goods..... 80&5@80&10%
Flint & Wallings Fast Mail.....65%
Myer's Pumps, low list.....55%
Pump Leathers, all sizes.....₱ gr. $6.00
Contractors' Rubber Diaphragm Non-chokable, B. & L. Block Co.....20%

Punches—

Bemis & Call Co.'s Cast Steel Drive..50&5%
Bemis & Call Co.'s Check.....55%
Bemis & Call Co.'s Spring.....50&5%
Bemis & Call Co.'s Springfield Socket..65%
Niagara Hollow Punches.....45%
Niagara Solid Punches.....55%
Saddlers' or Drive, good...₱ doz. 80@65%
Spring, good quality..₱ doz. $1.70@1.80
Spring, Leach's Pat.....15%
Steel Screw, R. & K. Mfg. Co.....50%
Tinners' Hollow, P., S. & W. Co.....30&2%
Tinners' Solid, P., S. & W. Co., ₱ doz., $1.44.....55%

Rail—

Barn Door, &c.—

Barn Door. Light....In.	½	⅝	¾
₱ 100 feet.....	$1.30	1.95	2.80

B. D., for N. E. Hangers:

	Small.	Med.	Large.
₱ 100 feet.....	$1.60	2.00	2.50

Cronk's Double Braced Steel Rail, ₱ foot.....3¢
Lanes' N. T., ₱ 100 ft.....$2.40
Lanes' Standard, ₱ ft.....3¼¢
McKinney's None Better.....₱ ft. 2¾¢
McKinney's Standard.....₱ ft. 3¼¢
Moore's, Wr't. Bracket, Steel.....$2.40
Sliding Door, Bronzed Wr't Iron, ₱ ft. 6½¢
Sliding Door, Iron Painted.....₱ ft. 2¢
Sliding Door, Wr't Brass, 1½in. ₱ ft 36¢
.....50%
Stowell's Steel Rail.....35&10%
Terry's Steel Rail .....₱ ft. 3¼¢

Rakes—

Cast Steel, Asso. List.....77½&2%
Malleable.....70&10%
Buffalo Lawn and Garden..₱ doz. $3.50
Fort Madison Red Head Lawn.....$3.00
Fort Madison Blue Head Lawn.....$2.65

Rasps, Horse—

New Nicholson Horse Rasp.....70&10%
See also *Files.*

Razor Strops—

See *Strops, Razor.*

Reels—

Clothes Line—

Stearns'.....33⅓&10%

Fishing—

Hendryx Aluminum, German Silver, Gold, Bronze, Silver, Rubber, Populo and Salmon, Single Action, Multiplying and Quadruple, all sizes.....25%
Hendryx Single Action Series, 102P and PN, 202P and PN, 102 PR and PRN, 202 PR and PRN, 304 P and PN, 00304P and PN, 502 and 502N, 802 and 802N, 02084N, Competitor.50%
Hendryx Multiplying and Quadruple Series, 3004N and PN, 4N and PN, 2904P and PN, 02904PN, 0924 and 0924N, 5009N and PN.....40&10%

Registers—

List Dec. 20, '97:
Japanned.....40&10@50%
Nickel Plate.....40&10%
Bronze Plate.....40%
Imitation Bronze.....40%

Rings and Ringers—

Bull Rings—

Peck, Stow & W. Co.'s.....60@60&10%
Sargent's.....80@80&10%

Hog Rings and Ringers—

Blair's Rings.....₱ gro. $3.40@3.50
Blair's Ringers.....₱ doz. 55¢@60¢
Brown's Rings.....₱ gro. $3 40@3.50
Brown's Ringers.....₱ doz. 55¢@60¢
Hill's Rings.....₱ gr. boxes, $2.90@3.00
Hill's Ringers.....₱ 100. 50@55¢
Perfect Rings.....₱ gro. $7.00@7.50
Perfect Ringers, ₱ doz.....75@80¢

Rivets and Burrs—

Copper.....50@50&10%
Norway Quality or Soft Steel:
Tinners'.....80@80&10&5%
Miscellaneous.....80@80&10%

Rivet Sets—See *Sets.*

Roasting and Baking Pans—See *Pans, Roasting and Baking.*

Rods—

Stair, Black Walnut .....₱ doz. 40¢
Stair, Brass, Oval or Hollow..50@50&10%

Rollers—

Acme Stowell's Anti-Friction .... 50&10%
Barn Door, Sargent's list..60&10&10@70%
Lane's, Stay .....33⅓&5%
Stowell's Barn Door Stay...₱ doz. $1.00

Rope—

The following prices are f.o.b. New York or factory: terms, 1½% for cash.

Manila, 7-16 inch and larger.....₱ ℔ 7½@7¾¢
Manila.....⅜ inch. ₱ ℔ 8 @8¼¢
Manila.....¼ and 5-16 inch. ₱ ℔ 8½@8¾¢
Manila, Tarred Rope, 15 thread ₱ ℔ 7½@7¾¢
Manila Hay Rope Medium..₱ ℔ 7½@7¾¢
Sisal... 7-16 in. and larger. ₱ ℔ 7 @7¼¢
Sisal.....⅜ inch.. ₱ ℔ 7½@7¾¢
Sisal.....¼ and 5-16 in.. ₱ ℔ 8 @8¼¢
Sisal, Hay Rope, 2 to 10 ply. ₱ ℔ 7 @7½¢
Sisal, Medium Lath Yarn.. ₱ ℔ 6½@6¾¢
Cotton Rope:
Best, ¼ in. and larger.....₱ ℔ 13@14¢
Medium, ¼ in. and larger..₱ ℔ 10@12¢
Common, ¼ in. and larger...₱ ℔ 8@10¢
Jute Rope.....₱ ℔ 5½@6¢

Wire Rope—

List Sept. 1, '94. All kinds, 20&2½&2 cash

Rules—

Boxwood.. 80&10&10&10@80&10&10& 10&10&10%
Ivory ... 40&10&10@40&10&10&10&10%
Lufkin's Steel.....50&10%
Lufkin's Lumber .....50&10%
Stanley R. & L. Co.;
Boxwood.....80&10&10@80&10&10&10&10%
Ivory..... .40&10&10@40&10&10&10%

Sad Irons—See *Irons, Sad.*

Sand and Emery Paper and Cloth—

See *Paper and Cloth.*

Sash Cords—See *Cord, Sash.*

Sash Locks—See *Locks, Sash.*

Sash Weights—

See *Weights, Sash.*

Sausage Stuffers or Fillers—See *Stuffers or Fillers, Sausage.*

Saws—

NOTE.—Extra 5@10% often given.

Atkins' Circular.....50%
Atkins' Band 50%
Atkins' Cross Cuts 40%
Atkins' Mulay, Mill and Drag.....50%
Atkins' One-Man Saw.....40&10%
Atkins' Wood Saws .....40&10%
Atkins' Hand, Compass, &c.....40%
Disston's Circular.....45@50%
Disston's Cross Cut, list Jan. 1, '93, 40&10%
Disston's Hand.....25%
C. E. Jennings & Co.'s.....25&5@30&5%
Peace Circular and Mill.....45&10%
Peace Cross Cuts, list Jan. 1, '93, 45&10&5%
Peace Hand, Panel and Rip.....25&10&5%
Richardson's Circular and Mill...45&10%
Richardson's X Cuts, list Jan. 1, '93, 45&10&5%
Richardson's Hand, &c.....25&10&5%
Simonds' Circular Saws.....45@50%
Simonds' Crescent Ground Cross Cut Saws.....35%
Simonds' One-Man Cross Cuts.....40&10%
Simonds' Gang Mill, Mulay and Drag Saws.....45@45&5%
Wheeler, Madden & Clemson Mfg. Co.:
Cross Cuts, list Jan. 1, '93....45&10&5%
Hand, Panel and Rip... ....30&10&10%
Woodrough & McParlin:
Cross Cuts, list Jan. 1, '93..45&10&10%
Hand, Panel and Rip.....25&10&10%

Hack Saws—

Griffin's complete.....50@50&5%
Griffin's Hack Saw Blades.....50@50&5%
Star Hack Saws and Blades..... 15&10%

Scroll—

Barnes' No. 7, $15.....25%
Barnes' Velocipede Scroll Saw, $18...20%
Barnes' Scroll Saw Blades.....40%
Lester, complete, $10.00.....15&10%
Rogers, complete $4.00.....15&10%

Saw Frames—

See *Frames, Saw.*

Saw Sets—See *Sets, Saw.*

Saw Tools—See *Tools, Saw.*

Scale Beams—

See *Beams, Scale.*

Scales—

Chatillon's Eureka.....25%
Chatillon's Favorite.....40%
Chatillon's Grocers' Trip Scales.....50%
Family, Turnbull's .....30@30&10%
Hatch, Counter, No. 171, good quality, ₱ doz. $17.00@18.00
Hatch, Tea, No. 161....₱ doz. $5.75@6.00
Peloube Scales — Family, Candy, Grocers and Postal.....33⅓%
Union Platform, Plain.....$2.00@2.10
Union Platform, Striped.....$2.15@2.25
"The Standard" Portables.....45@50%
"The Standard" R. R. and Wagon...60%

Scrapers—

Adjustable Box Scraper (S. R. & L. Co.) $6.00.....40&10%
Box, 1 Handle.....₱ doz. $2.00
Box, 2 Handle.....₱ doz. $3.00@4.00
Foot.....55&5@60&5%
Ship, No. 1, ₱ doz., $3.50; No. 2, $2.25 @$2.40
Ship, R. I. Tool Co.....10%
Tatum's Box .....25&10%

Screen Window and Door Frames—See *Frames.*

Screw Drivers—

See *Drivers, Screw.*

Screws—

Bench and Hand—

Bench, Iron.....₱ doz., 1 in., $2.50; 1¼, $2.75; 1¾, $3.25
Bench, Wood, Beech..₱ doz. $2.00@2.20
Hand, Wood.....30&10@40&10%
Hand, Grand Rapids.....35%

Coach, Lag and Hand Rail—

Lag, Common Point, list Jan. 30, '95.....85@85&7½%
Coach and Lag, Gimlet Point, list Jan. 30, '95.....85@85&5%
Hand Rail, list Jan. 1, 1881.....82½%

Jack Screws—

Millers Falls.....50&10&10%
Millers Falls, Roller .....50&10%
P., S. & W.....40@40&10%
Sargent.....70&10&10%
Stearns' .....40&10%
Tatum's.....25&10%

Machine—

List Jan. 1, '98,
Flat Head, Iron or Brass.....60%
Round Head, Iron or Brass.....60%

Set and Cap—

Set (Iron or Steel)..... .....70&10%
Sq. Hd. Cap.....65&10%
Hex. Hd. Cap..... .....60&10%

Wood—

Manufacturers' Circular Prices
List Nov. 10, 1898.

Flat Head, Iron	87½%
Round Head, Iron	85 %
Flat Head, Brass	85 %
Round Head, Brass	82½%
Flat Head, Bronze	82½%
Round Head, Bronze	80 %
Rogers' Drive Screws	87½%

Note—An extra 5 or 10% is often given.

Scroll Saws—See *Saws, Scroll.*

Scythes—

Grass and Grain.....50&10%

Scythe Snaths—

See *Snaths, Scythe.*

Seeders—

Raisin—

Enterprise.....25@30%

Sets—

Awl and Tool—

Brad Awl and Tool Sets:
Wood Hdle., 10 Awls, ₱ doz.....$3.00
Wood Hdle., 14 Awls, 6 Tools, ₱ doz. $2.25@2.40
Aiken's Sets, Awls and Tools:
No. 20, ₱ doz. $10.00, 60&10@60&10&5%
Fray's Adj. Tool H'dls...Nos. 1, $12; 2, $18; 3, $12; 4, $9; 5, $7.....50%
Millers Falls Adj. Tool H'dls, No. 1, $12; No. 4, $12; No. 5, $18 .... 15&10%
Stanley's Excelsior:
No. 1, $7.50; No. 2, $4.00; No. 3, $5.50.....40&10@40&10&5%

Garden Tool Sets—

Ft. Madison Rakes, Shovel and Hoe.... ₱ doz.....$9.00

Nail—

Round, assorted.....₱ gr. $3.00@3.25
Octagon.....₱ gr. $4.00@4.75
Buck Brothers.....27½%
Cannon's Diamond Point, ₱ gr. $12..25%
Snell's Corrugated, Cup Pt.....50%
Snell's Knurled, Cup Pt..... ....60%

Rivet—

Regular list.....70@70&10%

Saw—

Aiken's Genuine.....₱ doz. $4.50@5.00
Aiken's Imitation .....₱ doz. $3.00@3.10
Atkin's Criterion.....₱ doz. $6.00
Atkin's Adjustable.....₱ doz. $6.00
Bemis & Call Co.'s Cross Cut.....30&5%
Bemis & Call Co.'s Plate.....20%
Bemis & Call Spring Hammer.....30&5%
Disston's Star.....25@25&10%
Hammer, Bemis & Call Co.'s new Pat.45%
Hammer, Seymour, Smith & Son, ₱ doz. $4.75
Morrill's No. 1, $15.00.....40&20%
Nos. 3 and 4, Cross Cut, $23.00.40&20%
No. 5, Mill, $31.00.....40&20%
No. 10, $15.50.....40&20%
No. 11, $16.00.....40&20%
Stillman.....₱ doz. $1.00
Taintor Positive, ₱ doz. $18.....60%

Sharpeners, Knife—

Tanite Mills ₱ gross, $14.40....25@33⅓%

Shaves, Spoke—

Iron .....₱ doz..$0.95@1.00
Wood.....₱ doz..$2.25@2.50
Bailey's (Stanley R. & L. Co.).....50&10%
Cincinnati.....25&10%
Goodell's, ₱ doz. $9.00.....15&10%
Stearns'.....40&10%
Tatum's.....25&10%

Shears—

Cast Iron, good quality, ₱ gross, 7-in., $14; 8-in., $16; 9-in., $18.
Cast Iron, cheaper grade, ₱ gross, 7-in., $8.50; 8-in., $9; 9-in., $11.50.
Acme Cast Shears.....40@40&5%
Straight Trimmers, &c.
Good quality.....70&10@75&10%
Second quality.....80&10@85%
Davenport Cutlery Co.....60@60&10%
Heinisch's Tailors' Shears.....40@40&5%
Seymour's, list Dec. '81.....60&10&10@70&5%
Seymour's Nickel.....50&10@60&5%
Seymour's Tailors Shears.....40@40&5%
Wilkinson's Hedge.....50%
Wilkinson's Sheep.....15%

Tinners' Snips—

Forged Handles, Steel Blades.....20&10%
Malleable Handles, Laid with Steel...40%
Forged Handles, Steel Blades, Berlin.. 40&10%
Niagara Snips.....40%
Seymour's..... .....60&10&10@70&5%

Pruning Shears and Tools—

Disston's Combined Pruning Hook and Saw, ₱ doz. $18.00.....25@25&10%
Disston's Pruning Hook, ₱ doz. $12.00 25@25&10%
Eagle Pruning Shears.....60%
John T. Henry Mfg. Company:
Henry's Genuine, Nos. 1, 2 and 22 .....50&10%
Henry Pattern, No. 20.....50&25%
Henry's Pattern, No. 21.....50&30%
Conn. Pattern, Nos. 32, 33 and 3.50&25%
Conn. Pattern, No. 4.....50&20%
Henry's Orange Shears.....50&30%
Henry's Grape Shears..... ...50&20%
Henry's Tree Pruners.....75%
Levin Pruner, No. 23, $9.00 ₱ doz....45%
Levin Pruner, No. 24, $12.90 ₱ doz...45%
No. 100 Pruning Shear.....60&10%
P., S. & W. Co.....60%
Seymour's.....60&10&10@70&5%
Seymour Smith & Son:
Rockdale.....20%
New Standard Tree Pruner. ....80&5%
Others.....05%
Telegraph Tree Pruner.....70&5%
Waters' Tree Pruner .....80&5%
Wheeler, M. & C. Co., Combination, ₱ doz. $12.00.....25&10@25&10&5%

Sheaves—Sliding Door—

Stowell's Anti-Friction.....50%
Patent Roller.....60&10@60&10&5%
Patent Roller Hatfield's, Sargent's list, 80&10@80&10&7%
Reading.....70&10@75%
R. & E.....40&10@60&10&5%
Wrightsville, Hatfield Pattern....80&10%

Sliding Shutter—

Reading list.....70&10@75%
R. & E.....60@60&10%
Sargent's list.....60@60&10%

Shells—

Brass Shot Shells, Club, Rival, Climax, 65&2%
Brass Shot Shells, first quality.....60&2%
First quality 4, 8, 10 and 12 gauge, 25&10&2%
First quality Rival, Club and Climax brands, 14, 16 and 20 gauge ($7.50 list).....20&10&2%
Quick Shot, Reinforced New Victor40&2%
Smokeless brand, 12, 10, 16 gauge.... 33⅓&10&2%
Star, Club, Rival and Climax Brands .. 33⅓&10&2%
Trap brand 12 and 10 gauge. 33⅓&10&2%

Shells, Loaded—

Loaded with Black Powder..... 40&5@40&10%
Loaded with Nitro Powder..... 40&10&10&5@40&10&10&10%

Ship Tools—

L. & I. J. White 25%

Shoes, Horse, Mule, &c.—

Burden's, Perkins', Phœnix, Old Dominion Bryden's Boss Crescent, &c., from jobbers.....$3.10@3.25
Bryden's Frog Pressure.....$4.00
Gibbs' Rubber Cushioned....₱ set, $1.50

Shot—

Drop, up to B 25-℔ bag.....$1.40@1.45
Drop, up to B, 5-℔ bag ..... .30
Drop, B and larger, 25-℔ bag.$1.65@1.70
Drop, B and larger, 5-℔ bag..... .35
Buck 25-℔ bag.....$1.65@1.70
Buck, 5-℔ bag..... .35
Chilled, 25-℔ bag.....$1.68@1.73
Dust Shot, 25-℔ bag..... 2.00
Dust Shot, 5-℔ bag..... .50

These prices are often shaded 5@10¢ ₱ 25 ℔ bag, especially in the West, and with the rapid advances which have taken place merchants are often in a position to undersell the manufacturers.

Shovels and Spades—

No. 2, Polished, Sq. or Rd. Point. D or L Handle:

	Price ₱ doz.	
	A1, 1st Grade.	B2, 2d Grade.
Plain Back.....	$8.10@8.40	$7.20@7.50
Strap Back.....	7.50@7.80	6.60@6.90
Cleveland Pat'rn	7.80@8.10	6.90@7.20
	C3, 3d Grade.	D4, 4th Grade.
Plain Back.....	$6.30@6.60	$5 70@6 00
Strap Back.....	5.70@6 00	5.10@5.40
Cleveland Pat'rn	6 00@6.30	5.40@5.70

All other sizes add 30¢ ₱ doz.
Black deduct 30¢ ₱ doz.

Shovels and Tongs—

Brass Head.....60&10@60&10&10%
Iron Head.....60&10@60&10&5%

Sieves and Sifters—

Buffalo Metallic. S. S & Co., ₱ gr.:

	16	16&18	18	18&20
Blued ...	$10.80	$11.40	$11.40	$12.00
Tinned..	11.40	12.00	12.00	12.60
Eclipse.....		₱ gr.	$8.00@	9.00
Hunter's Genuine....		₱ gr.	$9.50@	10.00
Hunter's Imitation...		₱ gr.	$8.50@	9.00

Shaker (Barler's Pat.) Flour Sifters.. ₱ doz., $3.00.....35%

Sieves, Wooden Rim—

	Iron.	Plated.
Mesh 18, Nested, ₱ doz....	$0.70	$0.85
Mesh 20, Nested, ₱ doz....	.90	1.05
Mesh 24, Nested, ₱ doz....	1.05	1.20

Sinks—

Cast Iron—

According to list.....70&10@50&10%

Wrought Steel—

Columbus Galv'd and Enameled.50&10%
Columbus, Painted.....30&10%
L. & G... .....50&10%

Slates—(From store).

"D" Slates.....50&10&10&10&5%
Unexcelled Notchless Slates, 6u&nine 10s.
Victor Slates.....60 and eight 10s and 5%

Slaw Cutters—See *Cutters.*

Snaps Harness—

Covert Mfg. Co.:
Leroy.....45&2%
High Grade.....45&2%
Jockey.....45&2%
Trojan.....45&2%
Covert's Saddlery Works:
Banner.....75%
Crown.....70%
Triumph.....70%
W. & E. T. Fitch:
Bristol.....40&10%
Empire.....40&10%
National.....50&5%
Clipper.....50&5%
Champion.....50&10&5%
Victor.....40&10%
German.....60&5%
Sargent's Patent Guarded.....50@50&5%
70&10@70&10&10%

Snaths—

Scythe.....55%

Snips, Tinners'—See *Shears.*

Soldering Irons—

See *Irons, Soldering.*

Spoke Trimmers—

See *Trimmers, Spoke.*

Spoons and Forks—

Tinned Iron—

Basting, Cen. Stamp Co.'s list.75&10@80%
Solid Table and Tea, Cen. Stamp. Co.'s list.....70&25%

Silver Plated—

Flat Ware.....60&5@60&10&5%
Rogers & Brother.....60%
C. Rogers & Bros.....60%
Wm. Rogers Mfg. Co.....60%

Miscellaneous—

German Silver.....60&10%
C. Rogers & Bros.:
18 per cent. German Silver.....60%
18 per cent. Nickel silver.....60%
Silver Metal.....50%
Wm. Rogers Mfg. Co.:
18% German Silver.....60%
Rogers' Silver Metal.....50&10%

Springs—

Door—

Champion (Coil).....60&10@50&10&10%
Gem (Coil).....25%
Rubber, complete.....₩ gro. $15.00
Star (Coil).....33⅓&10%
Torrey's Rod, 39 in.....₩ doz. $1.10@1.25
Warner's No. 1, ₩ doz. $1.50; No. 2, $3.40.....55@55&10%
Victor (Coil).....60&10@60&10&5%

Carriage, Wagon, &c.

Elliptic, Concord, Platform and Half Scroll, 60&10@60&10&10&10 or following net prices:

	Tempered Blk.	Brt.	Oil Tempered. Blk.	Brt.
1¼ in.	5½¢	5¾¢	6 ¢	6¼¢
1⅜ in.	5½¢	5¾¢	6 ¢	6¼¢
1½ in.	5¼¢	5½¢	6 ¢	6¼¢

Cliff's Bolster Springs.....6 ¢
Cliff's Seat Springs.....40&2%
.....₩ pair 48¢

Sprinklers, Lawn—

Enterprise.....25@30%
Philadelphia No. 1, ₩ doz. $12; No. 2, $15; No. 3, $24.....35%

Squares—

Nickel plated..... } List May 1, '95
Steel and Iron..... } 75&10@80&5%
Rosewood Hdl. Try Square and T-Bevels 60&10&10@70%
Iron Hdl. Try Squares and T-Bevels 40&10@40&10&10%
Disston's Try Sq. and T-Bevels....60&10%
Winterbottom's Try and Miter....50&10%

Squeezers—

Lemon—

Wood, Common, ₩ gr., No. 0, $5 00; No. 1, $6.50; No. 2, $10.00.
Wood, Porcelain Lined, No. 1..₩ doz. $3.25@3.50
Tinned Iron.....₩ doz. $0.80@1.25
Iron, Porcelain Lined, ₩ doz. $3.25@3.50
Hotchkiss Straight Flash....₩ doz. $9.60
Jennings' Star.....₩ doz. $1.85@1.90
Klug.....₩ doz. $2.00

Staples—

Barbed Blind, ½, ⅝ and ¾ in. ₩ lb 5¾@6¢
Fence Staples, Galvanized } Same price
Fence Staples, Plain..... } as B'rb Wire
Grand Crossing Tack Co.'s list....75&10% } See Trd.Rep.

Steels, Butchers'—

Dick's.....40%
Foster Bro's.....40%
C. & A. Hoffmann's.....40%
Nichols Bros.....40%
John Wilson's, list Sep. 1, '94.....50%
.....25%

Steelyards.....40@40&10%

Stocks and Dies—

Blacksmith's:
Butterfield's Goods.....35@40%
Waterford Goods.....35@40%
Gardner.....35@40%
Green River.....40&10%
Lightning Screw Plate.....25%
Little Giant.....25%
Reece's New Screw Plates.....25%
Reversible Ratchet.....25@30%
.....25%

Stone—

Scythe Stones—

Pike Mfg. Co., list '95-'96.....33⅓%
Cleveland Stone Co., list Nov., '92..33⅓%

Oil Stones, &c.

Pike Mfg. Co.:
Hindostan No. 1, ₩ lb...8¢
Sand Stone.....5¢
Turkey Oil Stone, Extra, 5 to 9 lb.....80¢ } 33⅓&10%
Turkey Slips.....$2.00 } 33⅓&10%
Lily White Washita.....60¢
Rosy Red Washita.....60¢
Washita Stone, Extra.....60¢
Washita Stone, No. 1.....50¢
Washita Stone, No. 2.....40¢
Lily White Slips.....30¢
Rosy Red Slips.....90¢
Washita Slips, Extra.....90¢
Washita Slips, No. 1.....80¢
Arkansas Stone, No. 1, 3 to 5½ in. $2.85
Arkansas Stone, No. 1, 5¼ to 8 in. $3.50
Tanite Mills:
Emery Oil, ₩ doz. $5.00.....50@60%
} 35%@33⅓&10%

Stoners—

Cherry—

Enterprise.....25@30%

Stops, Bench—

Cincinnati.....25&10%
Seymour Smith & Son, ₩ doz., No. 1, $3.50; No. 2, $3.20
Millers Falls.....15&10%
Morrill's.....₩ doz., No. 1, $10.00; No. 2, $11.00, 40&20%
Stearns'.....30&5%
Tatum's.....40%

Stops, Window—

Tapiin's.....45%

Stove Boards—

See *Boards, Stove.*

Stove Polish—See *Polish, Stove.*

Straps, Box—

Cary's Universal.....20&10&10%

Stretchers, Carpet—

Cast Iron, Steel Points....₩ doz. 70@75¢
Cast Steel, Polished.....₩ doz. $2.25
Socket.....₩ doz. $1.75
Bullard's.....25&10@40%

Stuffers, Sausage—

Miles' Challenge, ₩ doz. $20....50@50&5%
Enterprise Mfg. Co., list Jan. 17, '93...25@25&7½%
National Specialty Mfg. Co., list Jan. 1, '97.....25%

Sweepers, Carpet—

Bissell:
Cosmopolitan, Cyco Bearing.....$24.00
Criterion.....$16.00
Furniture Protector, Japanned..$22.00
Furniture Protector, Nickeled..$24.00
Gold Medal, Cyco Bearing.....$24.00
Grand, Cyco Bearing.....$24.00
Grand Rapids, Japanned.....$36 00
Grand Rapids, Nickeled.....$22.00
Hall, Cyco Bearing.....$24.00
Improved Crown Jewel, Japn'd..$19.00
Improved Crown Jewel, Nickl'd..$21.00
Improved Victor.....$18.00
Popular.....$14 00
Premier, Cyco Bearing.....$24.00
Prize, Cyco Bearing.....$24.00
Standard, Japanned.....$24.00
Standard, Nickeled.....$20.00
Superior, Cyco Bearing.....$22.00
Welcome, Cyco Bearing.....$24 00
Toy Line: Misses', $9; Little Jewel, $6; Little Queen, $3.50; Child's, $2.50; Baby, $2; Daisy, $1.50.....$24.00
Goshen:
Acme, Nickel.....$24.00
Banner.....$24.00
Champion.....$20.00
Common Sense, Nickel.....$17.00
Easy, Jap'd, ₩ doz. $20. Nickel, $22.00
Gilt Edge, Nickel.....$24.00
Grand Republic (18 inch) Nickel..$33.00
Grand Republic, Nickel.....$25.00
Imperial, Nickel.....$15.00
Ladies' Friend No. 1.....$16.00
Ladies' Friend No. 2.....$86.00
Little Pet.....$24.00
Majestic, Nickel.....$24.00
Model, Nickel.....$24.00
Our Best, Nickel.....$24.00
Our Leader.....$18.00
Our Own, Nickel.....$24.00
Rapid, Nickel.....$22.00
Reliable.....$20.00
Select, Nickel.....$16.00
Star.....$19.00
Toy.....$1.50
Triumph.....$19.00
Sweeperette:
No. 2, Oak, Jap'd.....$18.00
No. 4, Special, Oak and Birch, Silvered.....$20.00
No. 4, Regular, Oak and Birch, Nickeled.....$22.00
No. 6, Oak and Mahogany, Nick..$24.00
Diamond Medal.....$27.00
Comfort.....$24.00
Companion.....$15.00
Sunbeam, Toy.....$3.00
Dolly, Toy.....75¢

Tacks, Brads, &c.—

List Jan. 15, '99.

Carpet Tacks—
American Blued.....90&33⅓%
American Tinned.....90&40%
American Cut Tacks.....90&25%
Swedes Iron Tacks.....90&25%
Upholsterers' Tacks.....90&33⅓%
Gimp Tacks.....90&50%
Lace Tacks.....90&50%
Trimmers' Tacks.....85&10%
Looking Glass Tacks.....90&33⅓%
Bill Posters' and Railroad Tacks.....75%
Hungarian Nails.....90&33⅓%
Common and Patent Brads...80&20@8 &25%
Trunk and Clout Nails:
Blued.....75&10%
Tinned.....80&20%
.....50&20%

Miscellaneous—

Double Point Tacks..90 & 5 or 6 tens.
Steel Wire Brads, R. & E. Mfg. Co.'s list.....50&10@60%
See also *Nails, Wire.*

Extra 5@10% often given.

Tanks, Oil—

Emerald, S. S. & Co.....30-gal. $3.00
Emerald, S. S. & Co.....60-gal., $3.75
Queen City S. S. & Co., 60-gal., each $4.09; 100-gal., $6.25; 120-gal., $8.50; 200-gal., $14.00; 250-gal.....$17.75
Wilson's:
No. 9.....60&10%
Aztec, Force Pump.....60&10%
Cone Top, Measuring Pump.....60&10%
Cabinet, Measuring Pump.....50%
Gasoline Tanks.....60&10%

Tapes, Measuring—

American Asses Skin.....40&10@50%
Patent Leather.....25@25&10%
Steel.....33⅓@40%
Chesterman's.....25@25&5%
Keuffel & Esser Co., Steel and Metallic, new list, 1898.....35%
Lufkin's Steel and Metallic.....33⅓@30&5%

Thermometers—

Tin Case.....80&10%

Ties, Bale—Steel.

Standard Wire, list.....50&10&5%

Ties, Wall—

Cleveland, Steel.....₩ 1000, $10.00

Tinners' Shears, &c.—

See *Shears, Tinners, &c.*

Tinware—

Stamped, Japanned and Pieced, sold very generally at net prices.

Tire Benders, Upsetters, &c.—See *Benders and Upsetters, Tire.*

Tobacco Cutters—

See *Cutters, Tobacco.*

Tools—

Coopers'—

Shaves, Cincinnati Tool Co.....20%
L. & L. J. White.....20@20&5%

Saw—

Atkins' new list.....40%
Simonds'.....33⅓%

Transom Lifters—

See *Lifters, Transom.*

Traps—Game—

Newhouse.....50@50&10%
Oneida Pattern.....80@80&5%
Sensible.....33⅓@33⅓&10%

Mouse and Rat—

Dandy.....₩ doz. $1.75
Marty French Rat and Mouse Traps (Genuine):
No. 1, Rat.....₩ doz. $15.00
No. 3, Rat.....₩ doz. $5.85
No 3½, Rat.....₩ doz. $4.50
No. 4, Mouse.....₩ doz. $4.30
No. 5, Mouse.....₩ doz. $3.00
Hotchkiss Metallic Mouse, 5-hole traps, ₩ doz. 6¢; in full cases, ₩ doz.....60¢
Hotchkiss Imp. Rat Killer...₩ gr. $12.50
Hotchkiss New Rat Killer...₩ gr. $12.50
Mouse, Wood, Choker, ₩ doz. holes.8@9¢
Mouse, Round Wire, ₩ doz. $1.50....10%
Mouse, Sensible.....33⅓%
Rat, Decoy, ₩ gr. $10.00.....10%
Rat, Sensible.....33⅓%
Schuyler's Rat Killer, No. 1, ₩ gr. $13.50; No. 2, ₩ gr. $15.00

Fly—

Balloon, Globe or Acme, ₩ doz. $1.25; ₩ gr. $13.50
Harper, Champion or Paragon ₩ doz. $1.75; ₩ gr. $16.50

Triers—

Butter and Cheese.....25%

Trimmers, Spoke—

Bonney's No. 1, ₩ doz. $2.75; No. 2, $3.75
Cincinnati.....25&10%
Douglas', ₩ doz. $9.00.....20%
Stearns'.....20&10%

Trowels—

Garden.....70%
Disston's Br'k and Plastering.25@25&10%
Peace's Plastering.....25@25&5%
Rose Brick and Plastering...₩ gr. $30&10%
Woodrough & McParlin, Pl st'ring.25&10%

Trucks, Warehouse, &c.—

B. & L. Block Co.'s list.....40%
Daisy Stove Trucks, Improved pattern ₩ doz. $18.00

Tubs, Wash—

	No. 1	2	3
Galvanized, ₩ doz.	$4.00	4 50	5.00

Galvernized S. S. & Co., with Wringer Attachment, ₩ doz., No. 10, $6.25; No. 20, $6.75; No. 30.....$7 50

Twine—

Binder—

White S sal, 500 feet to ₩.....8½¢
Standard, 500 feet to ₩.....8½¢
Manila, 600 feet to ₩.....9¼¢
Pure Manila, 650 feet to ₩.....9¾¢

Miscellaneous—

Flax Twine—

	BC.	B.
No. 9, ¼ and ⅛ ₩ Balls	20¢	24¢
No. 12, ¼ and ⅛ ₩ Balls	17¢	20¢
No. 18, ¼ and ⅛ ₩ Balls	14¢	17¢
No. 24, ¼ and ⅛ ₩ Balls	14¢	17¢
No. 36, ¼ and ⅛ ₩ Balls	13¢	16¢

Chalk Line, Cotton, ¼ ₩ Balls...18&20¢
Cotton Mops, 6, 9, 12 and 15 ₩ to doz. 85¢

Cotton Wrapping, 5 Balls to ₩....9@16¢
American 2-Ply Hemp, ¼ and ⅛ ₩ Balls.....9@10¢
American 3-Ply Hemp, 1 ₩ Balls.....9@10¢
American 3-Ply Hemp, 1 ₩ Balls (Spring Twine).....10@11¢
India 2-Ply Hemp, ¼ and ⅛ ₩ Balls (Spring Twine).....
India 3-Ply Hemp, 1 ₩ Balls.....8¢
India 3-Ply Hemp, 1⅛ ₩ Balls.....8¢
2, 3, 4 and 5-Ply Jute, ⅛ ₩ Balls.....7@7½¢
Mason Line Linen, ⅛ ₩ Balls.....6½¢
No. 264 Mattress, ¼ and ⅛ ₩ Balls.....45¢
Wool.....34¢
.....5@5½¢

Vises—

Solid Box.....70@70&5%

Parallel—

Bonney's.....50&5%
Fisher & Norris Double Screw.....15&10%
Hollands'.....40@40&10%
Massey's Perfect.....40@40&10%
Massey's Clincher.....20@25%
Merrill's.....40@40&10%
Miller's Falls.....25%
Parker's.....45&10%
Parker's Oval Slide.....20@25%
Parker's Victor.....50&10%
Prentiss.....30%
Sargent's.....20@25%
Simpson's Adjustable.....70&10@70&10&10%
Stephens'.....40%
Toles' Woodworking.....25@30%
Trenton.....25%
.....40&5@40&10%

Saw Filers—

Bonney's, Nos. 2 & 3, $15.00.....50&10%
Cincinnati.....25&10%
Reading.....25&10%
Stearns' Common, Nos. 0, 1, 2 & 3.....40&10%
Stearns' Rubber Jaw, Nos. 10 & 33.....33⅓%
Wentworth's Rubber Jaw, Nos. 1, 2 and 3.....40%

Miscellaneous—

Bignall & Keeler Combination Pipe Vise.....60&5%
Parker's Combination Pipe:
87 Series.....60%
187 Series.....60%
No. 870.....60&5%
.....40%

Wads—Price Per M.

U. M. C. & W. R. A.—B. E., 11 up.. 60¢
U. M. C. & W. R. A.—B. E., 9 & 10. 70¢
U. M. C. & W. R. A.—B. E., 7..... 80¢
U. M. C. & W. R. A.—P. E., 11 up $1.00
U. M. C. & W. R. A.—P. E., 9 & 10..1.25
U. M. C. & W. R. A.—P. E., 8.....1.50
Ely's B. E., 11 and larger.....1.50
Ely's P. E., 12 to 20.....$1.70@1.75
.....$3.00@3.25

Dis. 20&2½

Wagon Boxes—

See *Boxes, Wagon.*

Wagon Jacks—

See *Jacks, Wagon.*

Ware, Hollow—

Aluminum—
S. S. & Co. Reduced List.....40%

Cast Iron, Hollow—

Stove Hollow Ware—
Ground.....70@70&5%
Unground.....70@70&5%
White Enameled Ware—
Maslin Kettles.....75@75&5%
Boilers and Saucepans.....80@80&5%
Tinned Boilers and S'pans.....65@65&5%
.....60&10%

Enameled—

Agate and Granite Ware, list Jan. 1, '94, revised Jan. 2, '95.....40&10%
Second Quality.....70&10@70&10&10%
Ironclad Enameled Ware, Old list...70%
Never Break Enameled.....70%

Kettles—

Galvanized Tea Kettles—

Inch....	6	7	8	9
Each...	40¢	45¢	50¢	55¢

Steel Hollow Ware.

Avery Spiders & Griddles.....80%
Avery Kettles.....80%
Never Break Spiders and Griddles..80%
Never Break Kettles.....65%
Solid Steel Spiders & Griddles.....65%
Solid Steel Kettles.....70&15%
Solid Steel Ware, Enameled.....60&10&10%
.....5C&10%

Silver Plated Hollow—

William Rogers Mfg. Co.....40&10&5%

Washboards—

Solid Zinc:
Crescent, family size, bent frame..₩ doz. $2.75
Red Star, laundry size, stationary protector.....$4.00
Double Zinc Surface:
Diamond, family size, stationary protector.....$2.75
Saginaw Globe, family size, stationary protector.....$2.50
Wilson, family size, bent frame...$2.50
Single Zinc Surface:
Nalad protector, family size, open back perforated.....$2.15
Diamond, protector family size, ventilated back.....$2.10
Saginaw Globe, protector, family size, ventilated back.....$2 00
Wilson, bent frame, family size, veutilated back.....$2 00
Eagle, protector, family size, ventilated back.....$1 85

Washers—

Leather, Axle—

Solid.....80&10&10@85%
Patent.....85@85&5%
Coil; ⅜ 1 1½ 1¾ Inch.
11¢ 13¢ 14¢ 17¢ ₱ 100.

Iron or Steel—

Size bolt..... 5-16 ⅜ ½ ⅝ ¾
Washers.....$4.00 3.00 2.25 2.00 2.00
In lots less than one keg add ¼¢ ₱ ℔, 5-℔ boxes add ½¢ to list.

Washer Cutters—

See *Cutters, Washer.*

Washing Machines—

See *Machines, Washing.*

Water Coolers—

See *Coolers, Water.*

Weather Strips—See *Strips, Weather.*

Wedges—

Oil Finish.....₱ ℔ 2.10¢
Axe Finish.....₱ ℔ 2.45¢

Weights, Sash—

Eastern: Carloads at factory.....$16@17
Less than carloads.....$17.00@19.00
Western: Carloads at factory .....
$13.50@14.50
Less than carloads at factory.....
$14.50@16.00

Well Buckets Galvanized

See *Pails, Galvanized.*

Wheels, Well—

8-in., $2.00; 10-in., $2.50; 12-in., $2.75

Wire and Wire Goods—

Market: Nos. 0 to 18 } See *Trade Report.*
Br. & Ann.
Cop'd.
Galv
Tin'd, Tin'd list
Stone, Br. and Ann'd:
Nos. 16 to 18
Nos. 19 to 26
Nos. 27 to 36

Annealed Wire on Spools.....
60&10@60&10&5%
Brass, list Feb. 26, '96.....20%
Copper, list Feb. 26, '96.....20%
Cast Steel Wire.....50%
Malin's Ann'd & Tin'd on Spools .60&20%
Malin's Brass & Cop. on Spools...50&10%
Steel Music Wire, 12 to 30, imported .
60@70¢ ₱ ℔
Stubs' Steel Wire.....$6.00 to £, 40%
Wire Clothes Line, see *Lines.*
Wire Picture Cord, see *Cord.*

Bright Wire Goods—

Iron.....90&25@90&30%
Brass.....90@90&10%

Wire Cloth and Netting—

Galvanized Wire Netting.....
90&25@80&25&5%
Painted Screen Cloth ₱ 100 ft...95@100¢
See *Trade Report*

Wire Barb—See *Trade Report.*

Wire, Rope—See *Rope, Wire.*

Wrenches—

Agricultural.....80&10@80&10&5%
Baxter's S.....70@70&5%
Coes' Genuine.....40&10&5&5&3%
Coes' "Mechanics'".40&10&10&5&5&3%
Acme.....60@60&5%
Aiken's Pocket (Bright).....$2.00@3.20
Alligator.....70@70&10%
Bemis & Call's:
Adjustable S.....35&5%
Adjustable 8 Pipe.....40%
Brigg's Pattern.....30&10%
Combination Black.....40&10%
Combination Bright.....40&5%
Cylinder or Gas Pipe.....55%
Extra Heavy.....45%
Merrick's Pattern.....50%
No. 3 Pipe, Bright.....50%
Bit Wrench, Adj., Tatum's,
₱ doz. $2.25.....25&10%
Boardman's.....33⅓%
Bull Dog, W. & B.....70@70&10%
Cincinnati Brace Wrenches.....25&10%
Donohue's Engineer.....40&10%
Eagle.....50&10%
Hercules.....70&10@75%
Stevenson.....60&10&10%
Tatum's Brace Socket.....40%
W. & B. Machinists' Knife Hdle.....
50&10@50&10&7½%
W. & B. All Steel Pipe.....50&10@60%
W. & B. Drop Forged Engineers'.....
35@40&10%

Wrought Goods—

Staples, Hooks, &c., list March 17, '92
90@90&10%

Yokes, Neck—

Covert Saddlery Works, Trimmed.70%
Covert Saddlery Works, Neck Yoke Centers.....70%

Yokes, Ox, and Ox Bows—

Fort Madison's Farmers' & Freighters'..
20%

PAINTS, OILS AND COLORS.—Wholesale Prices.

White Lead, Zinc, &c.

Lead, Foreign white, in Oil... 8 @ 8¼
Lead, American White, in Oil:
Lots of 500 ℔ or over..... 5¼@ 5¾
Lots less than 500 ℔..... .. @ 6
Lead, White, in oil, 25 ℔ tin pails, add to keg price..... .. @ ⅛
Lead, White, in oil, 12½ ℔ tin pails, add to keg price..... .. @ 1
Lead, White, in oil, 1 to 5 ℔ assorted tins, add to keg price.. .. @ 1½
Lead, White, Dry in bbls..... .. @ 5
Lead, American. Terms: On lots of 500 lbs. and over, 60 days, or 2% for cash if paid in 15 days from date of invoice.
Zinc, American, dry..... ₱ ℔ 3¾@ 4½
Zinc, French, S. & B. Red Seal... .. @ 7¾
Zinc, French, S. & B. Green Seal ..@7 7-10
Zinc, Paris, Red Seal..... .. @ 8½
Zinc, Paris, Green Seal..... .. @ 9¼
Zinc, Antwerp, Red Seal..... .. @ 7¾
Zinc, Antwerp, Green Seal..... .. @ 8¼
Zinc, V. M. in Poppy Oil, G. Seal lots of 1 ton and over..... .. @10¼
lots less than 1 ton..... @10¾
Zinc, V. M. in Poppy Oil, Red Seal, lots of 1 ton and over..... .. @ 9¼
lots of less than 1 ton..... @ 9¾
Discounts.—V. M. French Zinc.—Discounts to buyers of 10 bbl. lots of one or assorted grades, 1%; 25 bbls., 2%; 50 bbls., 4%. No discount allowed on less than 10 bbl. lots.

Dry Colors.

Black, Carbon.....₱ ℔ 5 @40
Black, Drop, Amer..... 2½@ 5
Black, Drop, Eng..... 5 @10
Black, Ivory.....10 @20
Blue, Celestial.....₱ ℔ 6 @ 8
Blue, Chinese.....30 @35
Blue, Prussian.....28 @32
Blue, Ultramarine..... 5 @30
Brown, Spanish..... ¼@ 1
Brown, Vandyke, Amer..... 1½@ 2½
Brown, Vandyke, Foreign..... 2½@ 5
Carmine, No. 40, in bulk.....$2.20@2.25
Carmine, No. 40, in ℔ bottles. 2.35@ ..
Carmine, No. 40, in ounce bot. 3.50@3.60
Green, Chrome, ordinary ..... 2 @10
Green, Chrome, pure.....18 @24
Lead, Red, bbls. and ½ bbls.... .. @ 5¼
Lead, Red, kegs..... .. @ 5½
Litharge, bbls. and ½ bbls..... .. @ 5¼
Litharge, kegs..... .. @ 5½
Ocher, French Washed..... 1 @ 1¾
Ocher, German Washed..... 4½@ 5
Ocher, American .... ₱ ton $8.00@17.00
Orange Mineral, English.. ₱ ℔ 8¼@ 9¼
Orange Mineral, French.....10½@10½
Orange Mineral, German..... 8½@ 8¾
Orange Mineral, American .... .. @ 7¾
Red, Indian, English..... 4½@ 8½
Red, Indian, American ..... 2½@ 3
Red, Turkey..... 4½@ 8
Red, Tuscan..... 7 @14
Red, Venetian, Amer.. ₱ 100 ℔.60 @70
Red, Venetian, English.....$1.05@2.00
Sienna, Italian, Burnt and Powdered..... ₱ ℔ 4 @ 9¼
Sienna, Ital., Raw, Powd..... 2½@ 7
Sienna, American, Raw..... 1¼@ 1½
Sienna, American, Burnt and Powdered..... ₱ ℔ 1¼@ 1½
Talc, French..... ₱ 100 ℔ 90 @1.50
Talc, American.....40 @65
Terra Alba, French, ₱ 100 ℔ .. 90 @1.00
Terra Alba, English.....75 @80
Terra Alba, American No. 1....#5 @75
Terra Alba, American No. 2....45 @50
Umber, Turkey, Bnt. & Pow. ₱ ℔ 2½@ 3
Umber, Turkey, Raw & Powd. 2½@ 3
Umber, Bnt. Amer..... 1¼@ 1½
Umber, Raw, Amer..... 1¼@ 1½
Yellow, Chrome.....10 @25
Vermillion, American Lead..... .. @10
Vermillion, Quicksilver, bbls. or kegs..... .. @61
Vermillion, Quicksilver, bags.... .. @62
Vermillion, Quicks'r, sm'r pkgs. @67
Vermillion, English, Import...70 @75
Vermillion, Artificial..... 5 @20
Vermillion Chinese.....70 @75

Colors in Oil.

Black, Lampblack, Best..... 10 @13
Black, Lampblack, Common... 7 @ 9
Blue, Chinese..... .....35 @40
Blue, Prussian.....25 @35
Blue, Ultramarine.....16 @20
Brown, Vandyke..... 7 @12
Green, Chrome..... 7 @11
Green, Paris.....17 @22
Sienna, Raw..... 7 @10
Sienna, Burnt..... 7 @10
Umber, Raw..... 6 @10
Umber, Burnt..... 7 @10

Miscellaneous.

Barytes, Foreign, ₱ ton....$20.00@23.00
Barytes, Amer. floated..... 18.00@20.00
Barytes, Crude..... 8.00@10.00
Chalk, in bulk.....₱ ton 2.00@ ..
Chalk, in bbls.....₱ 100 ℔ 35@ ..
China Clay, English..₱ ton 10.00@17.50
Cobalt, Oxide.....₱ 100 ℔ ... @ 1.76
Whiting, Common ₱ 100 ℔ .30@ .40
Whiting, Gilders..... .40@ .45
Whiting, extra Gilders'.... @ 55%
Paris Green:
Arsenic, kegs or casks.....12
Kegs, 100 ℔ @ 175 ℔.....12½
Kits, 14, 28, 56 ℔.....13½
Paper Boxes, 2 @ 5 ℔.....13¾
Paper Boxes, 1 ℔.....14
Paper Boxes, ½ ℔.....15
Paper Boxes, ¼ ℔.....16

Putty.

In barrels and ½ bbls..... 1 4-10@ 1¾
In tubs.....1½@1 6-10
In tin cans..... 1½@ 2
In bladders..... .... 1¾@ 2

Spirits Turpentine.

In Southern bbls.... .... @43 ¢
In machine bbls .... @45½¢

Glue.

Low Grade.....₱ ℔ 7 @ 9
Cabinet.....11 @15
Medium White.....10 @15
Extra White.....15 @25
French.....10 @25
Irish.....10 @12½

Animal Fish and Vegetable Oils.

Linseed, City, raw.....₱ gal.41 @42
Linseed, City, boiled.....43 @44
Linseed, Western, raw .... @41
Linseed raw Calcutta seed..... .. @54
Lard, Prime City, present make44 @46
Lard, City, Extra No. 1.... ....35 @37
Lard, City, No. 1.....29 @31
Cotton-seed, Crude.....17 @19
Cotton-seed, Summer Yellow, prime.....23 @23½
Cotton-seed Summer Yellow, off grades..... .. ..21½@22
Sperm, Crude..... @55
Sperm, Natural Spring.....57 @59
Sperm, Bleached Spring.....61 @63
Sperm, Natural Winter.... .... .. @62
Sperm, Bleached Winter..... .. @65
Whale, Crude..... .. @49
Whale, Natural Winter..... .. @48
Whale, Bleached Winter..... .. @50
Whale, Extra Bleached Win.... .. @52
Menhaden, Crude, Sound.....22 @23
Menhaden, Light Pressed.....27 @28
Menhaden, Bleached Winter.... @ ..
Menhaden, Extra Bleached....34 @ ..
Tallow, Western, prime.....40 @41
Cocoanut, Ceylon..... @ 6¼
Cocoanut, Cochin..... @ 6¼
Cod, Domestic..... @35
Cod, Newfoundland.....36 @4[illegible]
Red Elaine.....28 @30
Red Saponified.....₱ ℔ 3½@ 3¾
Bank.....₱ gal. .. @26
Straits..... @26
Olive, Italian, bbls.....56 @58
Neatsfoot, prime.....40 @42
Palm, prime, Lagos.....₱ ℔ 5 @ 5¼

Mineral Oils.

Black, 29 gravity, 25@30 cold test.....₱ gal. .. @ 7½
Black, 29 gravity, 15 cold test. .. @ 8½
Black, summer..... .. @ 7
Cylinder, light filtered..... .. @15½
Cylinder, dark filtered..... .. @10
Paraffine, 23½@24 gravity..... .. @ 9½
Paraffine, 25 gravity..... .. @ 8½
Paraffine, 28 gravity..... .. @ 7½
Paraffine, red, No. 1..... .. @ 9
In small lots ½¢ advance.

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CURRENT METAL PRICES.

FEBRUARY 22, 1899.

The following quotations are for small lots. Wholesale prices, at which large lots only can be bought, are given elsewhere in our weekly market report.

IRON AND STEEL—

Bar Iron from Store—

Common Iron: Duty, Round, 0.6¢ ₱ ℔; Square, 0.8¢ ₱ ℔
¼ to 2 in. round and square.... } ₱ ℔ 1.35¢ @ 1.40¢
1 to 6 in. x ⅝ to 1 in..... }
Refined Iron:
⅜ to 2 in. round and square.... }
1 to 4 in. x ⅜ to 1½ in..... } ₱ ℔ 1.45¢ @ 1.55¢
4½ to 6 in. x ⅜ to 1-in..... }
1 to 6 in. x ¼ and 5-16..... ₱ ℔ 1.65¢ @ 1.75¢
Angles..... 1.55¢
Tees..... 1.80¢
Beams..... 1.80¢
Channels..... 1.80¢
Rods—⅜ and 11-16 round and sq'e. ₱ ℔ 1.55¢ @ 1.65¢
Bands—1 to 6 x 3-16 to No. 12..... ₱ ℔ 1. 75¢ @ 2.00¢
"Burden's Best" Iron, base price.. ₱ ℔ .....2.50¢
Burden's "H. B. & S. Iron, base price..... ₱ ℔ .....2.30¢
"Ulster"..... ₱ ℔ .....2.50¢
Norway Bars..... 3.25 @ 3.75¢
Norway Shapes..... 3.75 @ 4.00¢

Merchant Steel from Store—

	per ℔
Open Hearth and Bessemer Machinery	1.50 to 1.60¢
Toe Calk, Tire and Sleigh Shoe	1.70 to 1.80¢
Best Cast Steel, base price in small lots	7 ¢
Best Cast Steel Machinery, base price in small lots	5 ¢

Soft Steel Sheets—

¼ inch	1 80¢	No. 14	2.00¢
3-16 inch	1.85¢	No. 16	2.10¢
No. 8	1.90¢	No. 18	2.20¢
No. 10	1.90¢	No. 20	2.40¢
No. 12	1.95¢	No. 22	2.50¢

Sheet Iron from Store.

Black.

	Common American.	R. G. Cleaned American.
Nos. 10 to 16	₱ ℔, 2.10	2.35¢
Nos. 17 to 21	₱ ℔, 2.20	2.45¢
Nos. 22 to 24	₱ ℔, 2.30	2.55¢
Nos. 25 and 26	₱ ℔, 2.40	2.65¢
No. 27	₱ ℔, 2.50	2.75¢
No. 28	₱ ℔, 2.60	2.85¢

Russia, Planished, &c.

Genuine Russia, according to assortment..... ₱ ℔ 10¼@10½¢
Patent Planished..... ₱ ℔ A, 9¾¢; B, 8¾¢, net.
Patent Planished Sheet Steel..... ₱ ℔ 8¼¢

Galvanized.

	B. B.	
Nos. 10 to 16	₱ ℔, 12¢	75&10%
Nos. 17 to 21	₱ ℔, 13¢	
Nos. 22 to 24	₱ ℔, 14¢	
Nos. 25 to 26	₱ ℔, 15¢	
No. 27	₱ ℔, 16¢	
No. 28	₱ ℔, 17¢	
No. 29	₱ ℔, 19¢	
No. 30	₱ ℔, 21¢	

30 in. 1¢ ₱ ℔ higher.

Foreign Steel from Store—

Best Cast	₱ ℔ 14 ¢
Extra Cast	₱ ℔ 16½ @ 17 ¢
Swaged, Cast	₱ ℔ 16 ¢
Best Double Shear	₱ ℔ 14 ¢
Blister, 1st quality	₱ ℔ 13 ¢
German Steel, Best	₱ ℔ 10 ¢
2d quality	₱ ℔ 9 ¢
3d quality	₱ ℔ 8 ¢
Sheet Cast Steel, 1st quality	₱ ℔ 14 ¢
2d quality	₱ ℔ 13 ¢
3d quality	₱ ℔ 11 ¢
R. Mushet's "Special"	₱ ℔ 46 ¢
" " " Annealed	₱ ℔ 75 ¢
" " "Titanic"	₱ ℔ 19 ¢
Hobson's Choice XX Extra Best	₱ ℔ 35 ¢
Jessop Self Hardening	₱ ℔ 40 ¢
Seamans' "Nelson" Steel	40 ¢

METALS—

Tin—

Duty.—Pigs, Bars and Block. Free.	Per ℔
Banca, Pigs	26½@27¢
Straits, Pigs	25½@26¢
Straits in Bars	27¢

Tin Plates—

American Coke Plates—Bright—

IC, 14 x 20 .....108 ℔	$3.90
IX, 14 x 20	4.65
IXX, 14 x 20	5.25

American Terne Plates—

IC, 20 x 28	$8.00@ 8.50
IX, 20 x 28	10.00@11.00

Tin Boiler Plates, American—

IXX, 14 x 26.....112 sheets	$10.25
IXX, 14 x 28.....112 sheets	11.20
IXX, 14 x 31.....112 sheets	12.40

Copper—

Duty: Pig, Bar and Ingot and Old Copper free Manufactured, 2½¢ ₱ lb.

Ingot—

Lake	20¢
Ansonia Grade Casting	19@19¼¢

Sheet and Bolt—

February 2, 1899. Prices, in cents per pound. Net.
Sheet 30 x 60.

Not wider than	Not longer than	And longer than	64 oz. & over, 30 lb. sheet, 30 x 60 and heavier.	38 oz. to 64 oz., 25 to 30 lb.	24 oz. to 38 oz. 18¾ to 25 lb.	16 oz. to 24 oz. 12½ to 18¾ lb.	14 oz. and 15 oz. 11 to 12½ lb.	12 oz. and 13 oz. 9½ to 11 lb.	10 oz. and 11 oz. 7¾ to 9½ lb.	8 oz. and 9 oz. 6¼ to 7¾ lb.	Lighter than 8 oz.
Ins.	Ins.	Ins.									
30	72	.....	21½	21½	21½	21½	22½	23½	24½	27½	30½
30	96	72	21½	21½	21½	21½	22½	24½	27½	30½	
30	.....	96	21½	21½	21½	21½	23½	27½			
36	72	.....	21½	21½	21½	21½	23½	25½	28½	31½	
36	96	72	21½	21½	21½	21½	23½	27½	30½		
36	120	96	21½	21½	21½	22½	24½				
36	.....	120	21½	21½	22½	23½					
48	72	.....	21½	21½	22½	24½	25½	28½	31½		
48	96	72	21½	21½	22½	24½	26½	29½			
48	120	96	21½	21½	23½	25½	26½				
48	.....	120	21½	22½	24½	27½					
60	72	.....	21½	22½	22½	24½	27½	32½			
60	96	72	21½	22½	23½	25½	30½				
60	120	96	21½	22½	24½	27½					
60	.....	120	21½	23½	25½	29½					
72	96	.....	21½	22½	24½	27½					
72	144	96	21½	23½	26½	31½					
72	.....	144	22½	24½	29½						
108	120	.....	22½	24½	30½						
108	.....	120	24½	25½							
wider than 108	144	.....	25½	27½							
	.....	144	26½	29½							

Bolt Copper, ⅜ inch diameter and over, ₱ ℔ 21½¢
Circles, Segments and Pattern Sheets, 3¢ ₱ ℔ advance over price of Sheet Copper required to cut them from.
Cold or Hard Rolled Copper 14 oz. ₱ square foot and heavier, 1¢ ₱ ℔ over the foregoing prices.
Cold or Hard Rolled Copper, lighter than 14 oz. ₱ square foot, 2¢ ₱ ℔ over the foregoing prices.
All Polished Copper, 20 in. wide and under, 1¢ ₱ ℔ advance over the price for Cold Rolled Copper.
All Polished Copper, over 20 in. wide, 2¢ ₱ ℔ advance over the price for Cold Rolled Copper.

Planished Copper—

1¢ ₱ ℔ more than Polished Copper.

Copper Bottoms, Pits and Flats—

14 oz. to square foot and heavier, ₱ ℔ .....25½¢
12 oz. and up to 14 oz. to square foot, ₱ ℔.....26½¢
10 oz. and up to 12 oz., ₱ ℔.....28½¢
Lighter than 10 oz., ₱ ℔.....31½¢
Circles less than 8 in. diameter, 2¢ ₱ ℔ additional.
Circles over 13 in. diameter are not classed as Copper Bottoms.

Copper Wire—

Hard and Soft Drawn—B. & S. Gauge.

Nos.	0000 to 8	9 and 10	11 and 12
	20¢	20½¢	20½¢
Nos.	13	14	15	16
	20½¢	20¾¢	21¢	21½¢
Nos.	17	18	19	20
	21½¢	22¢	22½¢	22¾¢

Seamless Brass Tubes—

Standard always Stubs' gauge, unless otherwise ordered.
Jan. 25, 1899. Net. Outside Diameter.

Stubs' W. G.	B. & S. W. G.	¼	5-16	⅜	7-16	½	9-16	⅝	¾	⅞	1	1¼	1½
4-11	3- 9	...	.....	...	.....	31	29	28	27	26	25	23	22
12	10	...	.....	35	33	31	29	28	27	26	25	23	22
13	11	...	.....	35	33	31	29	28	27	26	25	23	22
14	12	...	39	35	33	31	29	28	27	26	25	23	22
15	13	...	40	36	34	31	30	29	28	26	25	24	23
16	14	...	41	37	35	32	31	30	29	28	27	24	23
17	15	...	42	38	35	33	32	31	30	29	28	25	24
18	16	59	44	40	37	34	33	32	30	29	28	26	25
19	17	60	45	41	38	35	34	33	32	31	30	28	27
20	18-19	62	47	42	39	37	36	35	34	33	32	30	29
21	20	64	49	44	41	39	38	37	36	35	34	33	32
22	21	67	54	46	44	40	39	38	37	36	35	35	34
23	22	74	59	48	44	42	41	40	39	38	37	37	37
24	23	79	64	51	46	44	43	43	41	39	38	38	39
25	24	84	69	54	49	47	45	44	43	42	41	42	43

Copper Bronze and Gilding Tube, 3¢ ₱ ℔ additional.
Add 5¢ ₱ ℔ for Tubes ¼ inch thick or thicker.

Iron Pipe Sizes—Brass

⅛	¼	⅜	½	¾	1	1¼	1½	2	2½	3	3½	4	4½	5	6 inch
34	30	27	25	19	19	19	19	19	19	19	21	21	23	25	29¢ ₱ ℔

Copper, Bronze or Gilding Tubes, 3¢ ₱ ℔ additional.

Brazed Brass Tubing.

(*To No. 19, inclusive.*) Feb. 26 1898
Brown & Sharpe's gauge standard.

	Per ℔.
Plain Round Tube, ¼ in. up to 2 in.	$0.35
" ⅜ " ¾ "	.36
" ½ " ¾ "	.38
" ⅝ " ¾ "	.41
" ¾ " ¾ "	.48
" ¾ " 5-16 "	.65
" ¾ " ½ "	1.00
Smaller than ¼ inch	Special
3 inch and larger	.40
Over 3 inch to 3½ inch, inclusive	.45
Over 3½ inch	.50

Bronze and Copper, advance on Brass List, 3 cents.
Discount from list % 25%

Roll and Sheet Brass—

(*Brown & Sharpe Standard Gauge.*)

Common High Brass Wider than and including	in. 2 12	in. 12 14	in. 14 16	in. 16 18	in. 18 20	in. 20 22	in. 22 24	in. 24 26
To No. 20, inclusive	.22	.23	.25	.27	.29	.31	.33	.36
Nos. 21, 22, 23 and 24	.22	.24	.26	.28	.30	.32	.34	.37
Nos. 25 and 26	.23	.24½	.27	.29	.31	.33	.35	.38
Nos. 27 and 28	.23	.25	.28	.30	.32	.34	.36	.39

Common High Brass. Wider than and including	in. 26 28	in. 28 30	in. 30 32	in. 32 34	in. 34 36	in. 36 38	in. 38 40	in. 40
To No. 20, inclusive	.39	.42	.46	.50	.55	.60	.65	*
Nos. 21, 22, 23 and 24	.40	.43	.47	.51	.56	.61	.68	
Nos. 25 and 26	.41	.44	.48	.52	.57	.63	.71	
Nos. 27 and 28	.42	.45	.49	.53	.58	.65	.75	

* Special prices not less than 80 cents.
Add ½¢ ₱ ℔ additional for each number thinner than Nos. 28 to 38 inclusive. Discount from List..... 25%

Wire in Coils. List February 26, 1896.

Brown & Sharpe's gauge the standard.	Com. high brass.	Low brass.	Glid'g bronze and copper
All Nos. to No. 10, inclusive	$0.23	$0.27	$0.28
Above No. 10 to No. 16	.23½	.27½	.28½
No. 17 and No. 18	.24	.28	.32
No. 19 and No. 20	.25	.29	.33
No. 21	.26	.30	.34
No. 22	.27	.31	.35
No. 23	.28	.32	.36
No. 24	.30	.34	.38
No. 25	.32	.36	.40
No. 26	.35	.39	.43
No. 27	.38	.42	.46
No. 28	.42	.46	.51
No. 29	.45	.49	.54
No. 30	.48	.52	.62
No. 31	.51	.55	.67
No. 32	.55	.59	.73
No. 33	.59	.63	.82
No. 34	.64	.68	.95
No. 35	.70	.74	1.30
No. 36	.76	.80	1.50
No. 37	1.00	1.04	1.70
No. 38	1.30	1.34	2.00
No. 39	2.00	2.00	3.25
No. 40	2.60	2.60	5.75

Discount, Brass Wire, 25%; Copper Wire, NET.
List November 16, 96.
Spring Wire, 2¢ ₱ ℔ advance.

Spelter—Duty: In Blocks or Pigs, 1¢ ₱ ℔

Western Spelter..... 6½@6¾¢

Zinc.

Duty: Sheet, 2¢ ₱ ℔.

600 ℔ casks.....7¼¢ | Per ℔.....8¢

Lead.

Duty: Pigs and Bars and Old, 2½¢ ₱ ℔. Pipe and Sheets, 2½¢ ₱ ℔.

American Pig	5@5¼¢
Bar	6¢
Pipe (full lengths), subject to discount 20%	6½¢
Pipe cut lengths), subject to discount 20%	7¼¢
Tin Lined Pipe, subject to discount 20%	12½¢
Block Tin Pipe, subject to discount 20%	35¢
Sheet (full rolls) subject to discount 20%	7¾¢
Sheet (cut rolls (subject to discount 20%	8¼¢

Old Lead in exchange, 3½¢ ₱ ℔.

Solder.

½ & ½, guaranteed	16½¢
No. 1	15@15½¢

Prices of Solder indicated by private brand vary according to composition.

Antimony—

Duty, ¾¢ ₱ lb.

Cookson	₱ ℔ 10½@10¾¢
Hallett s	₱ ℔ 10@10¼¢
U. S	₱ ℔ 9¾@9¾¢

Aluminum—

Duty: Crude, 8¢ ₱ ℔. Plates, Sheets, Bars and Rods 13¢ ₱ ℔.

No. 1 Aluminum (guaranteed over 99% pure), in ingots for remelting:	
Small lots	₱ ℔ 37¢
100-℔ lots	₱ ℔ 35¢
No. 2 Aluminum (guaranteed to be over 90% pure), in ingots for remelting:	
Small lots	₱ ℔ 34¢
100-℔ lots	₱ ℔ 33¢
Special casting Alloy, containing over 80% pure Aluminum:	
Small lots.....₱ ℔ 35¢	100-℔ lots.....₱ ℔ 30¢
Aluminum Rods, from ¾-in. diam. to 1 in. diam.	₱ ℔ 53¢

Aluminum Sheet, B. & S. gauge. 50 ℔ or more.

Wider than	6-in.	14-in.	24-in.
And including	14-in.	24-in.	30-in.
	₱ ℔.	₱ ℔.	₱ ℔
Nos. 13 to 19	$0.38	$0.40	$0.43
No. 20	.40	.42	.45
Nos. 21 to 23	.42	.44	.47
No. 24	.42	.46	.49
No. 25	.43	.47	.50
No. 26	.43	.50	.55
No. 27	.44	.53	.58
No. 28	.44	.53	.60
No. 29	.45	.56	.65
No. 30	.46	.60	.73

Note.—Lots of less than 50 ℔ 5¢ ₱ ℔ extra.

Aluminum Wire, B. & S. Gauge.

Larger than No. 1, ₱ ℔ 55¢	No. 17 to No. 20, ₱ ℔ 80¢
No. 1 to No. 8, ₱ ℔ 60¢	No. 21, ₱ ℔ $1.15
No. 9 to No. 16, ₱ ℔ 65¢	

Old Metals.

Dealers' Purchasing Prices Paid in New York.

Heavy Copper	₱ ℔ 12½¢
Light and Tinned Copper	₱ ℔ 11¾¢
Heavy Brass	₱ ℔ 9 ¢
Light Brass	₱ ℔ 8 ¢
Lead	₱ ℔ 3.80¢
Tea Lead	₱ ℔ 4¾¢
Zinc	₱ ℔ 4 ¢
No. 1 Pewter	₱ ℔ 18 ¢
No. 2 Pewter	₱ ℔ 17 ¢
Tin Plate Scrap	₱ ton $3.50
Wrought Scrap Iron	₱ gross ton $9.00
Heavy Cast Scrap	₱ gross ton $8.25
Stove Plate Scrap	₱ gross ton $5.75
Burnt Iron	₱ gross ton $3.75